

COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

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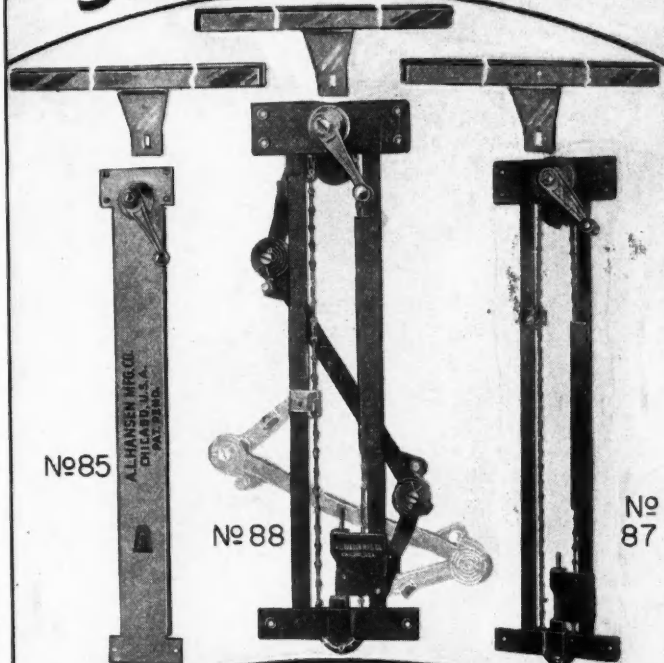
COMMERCIAL CAR JOURNAL
OCTOBER, 1938

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May 27, 1938.

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In order to grow oranges, grapefruit and tangerines, Dr. Phillips, the world's largest individual citrus grower, has to use almost every known type of motive and automotive equipment. Trucks, tractors, farm implements, airplanes, boats, Diesel, steam, and gasoline engines, all play their part in the growing and transportation of fruit from our five thousand acres in Florida to the housewives of America.

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TEXACO

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COMMERCIAL CAR JOURNAL
OCTOBER, 1938

CCJ QUIZ



The Quiz editor gets a half holiday without pay this month. Morris Machol, of the Fleet Owner List Co., sent in exactly half of the questions for which he gets paid \$1 each. That left the Quiz editor with only half a Quiz to concoct. Questions 3, 4, 7, 8 and 9 are of Machol origin. The Quiz editor is looking forward to the day when he can do this job by simply acknowledging reader's letters containing Quiz Questions. He is paying \$1 for each Quiz Question accepted.

In taking the Quiz, score 10 for each question answered correctly. If you make 80 you may grin contentedly. If you score 90 pat yourself on the back. If you get them all right, let us know.

Correct answers on page 68

1. The National Motor Truck Show which will be held in New York, Nov. 11-17 has been run annually for a number of years. This year's show is the

third fourth fifth sixth

2. This will test you on your newspaper reading. From Russia comes word that following tests its government has decided to build vehicles using one of the following as fuel oil alcohol vodka gasoline wood turpentine

3. You look at traffic lights every day but still chances are that you cannot say offhand which light is on top in a modern light which conforms to the accepted standards Yellow Red Green

4. If you know the answer to the previous question you can pick persons suffering from one of the following afflictions as being most likely to corroborate your answer pediculosis astigmatism hangover color blindness

5. Trucks with the engine so placed that there is no hood have been growing in popularity. One of the following terms is not used by any factory to describe this type of construction

camelback
cab-over-engine

cab forward
engine-under-seat

6. No matter which is correct, it's a long time to remember but, according to government production and registration figures, the truck industry dates from

1896	1904	1912
1900	1908	1914

7. You are using a hub odometer on the left front wheel of a truck. When the odometer reads 1000 miles the 36x6 tire on that wheel blows. The 36x6 tire is replaced by a 36x8 tire and when the odometer shows 2000 miles the truck will have gone, since the replacement,
1000 miles less than 1000
more than 1000

8. Every now and then you hear some one in a shop refer to 20-point steel. Perhaps you know that they refer to steel of the following properties
20% carbon 20/100 of 1% carbon
19 parts of steel to one part carbon

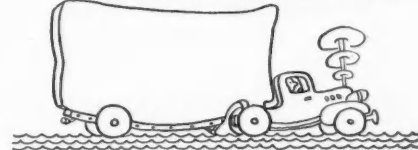
9. We all know that viscosity means resistance to flow but it is problematical how many people know whether SAE 20 means that
a given quantity of oil at a given temperature will flow through a given size orifice in 20 seconds
an arbitrary numerical designation for a range of seconds permitted in a standard SAE test

10. Federal Motor Truck Co. is an old timer in this business. If you know its president's name you can immediately pick it out of the following
R. W. Rudden E. W. Winans
Richard Hudnut M. L. Pulcher



Witness the granddaddy of all semi-trailer dumpers, 16 yd. of earth for San Francisco's sea plane base in every load. Fruehauf built it, a Sterling Cummins diesel pulls it, Heil telescopic hoists lift it

THE OVER LOAD



Diesel Intrigue

One half million dollars is enough money to intrigue editors. When a recent publicity release indicated that the Colonial Sand & Stone Co. had laid that amount on the line for diesel-powered trucks and diesel replacement engines for trucks already operating with gasoline engines we thought we had a story. Consequently an editor had his shoes shined and his suit pressed and made his way to 30 Rockefeller Plaza, the address of Colonial Sand & Stone in Radio City.

Half a Million Dollars . . .

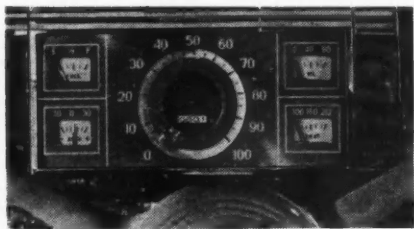
Mr. F. B. Carbone who handles transportation matters, among other things, for Colonial said that buying a half-million dollars' worth of diesel engines and diesel-powered trucks was a fairly simple process if you had the half-million dollars. Then in the next 10 min. he told us how Colonial went about buying diesel power in a large way.

. . . How It Was Spent . . .

Up to December, 1937, the Cummins Engine Co. representatives had been making what seemed to Colonial some bold claims about their diesel engines. In January, 1938, Colonial put into service one six-cylinder and one four-cylinder Cummins' engine as replacement units. They were watched very carefully for 90 days and the claims proved to be sound. Immediately Colonial began putting 50 engines in Mack trucks of 1931-32-33 vintage. Cummins Engine Co. did the actual installation.

. . . What It Bought . . .

With this campaign just about complete Colonial turned its thoughts



Plymouth's new "safety signal" speedometer flashes different colored lights at appropriate speed ranges. The '39 models also boast independent front-wheel suspension

to new equipment. The result was the purchase of 68 Mack trucks powered with Cummins' diesel engines, 50 of them with six-cylinder engines and 18 four-cylinder powerplants. About 80 per cent of the fleet is now diesel-powered.

... What It Is Doing

When it was suggested that diesel engines had been most successful in long haul operations and that pit, quarry and delivery work represented quite a departure from the accepted field of this type of engine, Mr. Carbone uncovered some figures. Their experience so far is that the diesel engines save them from \$3 to \$5 per day per truck. They have speeded up the trucks from 25 m.p.h. to 32 m.p.h. which enables Colonial to make one more delivery per day per truck. One run that is made every day has been cut from 3 hr. and 45 min. to 2 hr. and 30 min.

When we asked Mr. Carbone what he knew about diesel engine maintenance, he said, "not much" but that he had no fears. There were some competent mechanics in the Colonial organization and three of them had already been through the school at the Cummins' factory.

FEARS TO THE GROUND

Sissy Safari

A disturbing thought perennially plagues this department. Our operatives, used to the rigors of the truck industry, annually make a pilgrimage to the temples of passenger car manufacturing at this time of year to garner such advance information as their sensitive faculties are able to absorb. During their absence from regu-

AFTER HOURS

EDITORIAL COMMENT BY GEORGE T. HOOK

LABOR VS. LABOR RAILROADED REGULATION A MIRACLE?

Labor Against Labor

THE time has come for politicians—those who hold office as well as those who seek office—to realize that railroad trainmen are no longer the only organized labor group in the field of transportation that must be considered a potent political force. Unionization within the field of highway transportation has brought with it the dawn of a new era—politically speaking.

Today the American Federation of Labor has in its ranks two strong transportation groups: the railroad brotherhoods and the highway transport workers. They are friends where labor legislation is involved. But they are enemies, by virtue of their conflicting interests, when it comes to legislation affecting transportation agencies.

This very day, in too many States, the railroad brotherhoods are instigating and actively supporting legislation detrimental to highway transportation and consequently in con-

flict with the welfare of organized highway transport workers. If the legislation burdens truck operators (and most of it is aimed to do that very thing) with higher operating costs the effect on their employees' earnings cannot be otherwise than harmful. If one needs proof we refer him to the present plight of railroad management and its effect on railroad labor. The current demand of railroad management that labor take a cut in wages is the direct result of operating costs entirely out of proportion to income.

There are indications that organized highway transport workers realize there is no good for them in anti-truck legislation. There are signs that they will actively oppose such legislation in many of the 44 States whose Legislatures meet next year.

Highway transport management can further this wholesome development. The duty it owes to itself and to its employees is to make the latter familiar with proposed anti-truck

lar duty we never fail to speculate on the possibility of their being dazzled by the glittering baubles of the more esthetic forms of transportation and consequent failure to return to the homespun qualities of commercial transport. But they never fail us. One has already reported on a passenger car and returned to the fold. His report states that the only real change will be the disappearance of running boards. All other changes have to do with merchandising policy which concerns this department not at all.

Spring Scroll

Another passenger car line consisting of two sixes and an eight will enter the fray equipped with helper springs. The

suspension is built around the variable rate rear leaf spring developed by the Leaf Spring Institute. The helpers come into play in such a manner that a lonely driver or a carload can have the same type of ride.

Clutch Chapter

The diaphragm type clutch such as was used on Chevrolet last year finds another taker this year. It is to be used in conjunction with a transmission controlled from the steering post. This same line is to have heaters mounted under the car instead of the usual place.

Manufacturing Marginalia

Our agents have been bearing down on

legislation; to point out its likely effect on them, and thereby encourage them to oppose the legislation as voters whose voices will be listened to by legislators. Management's task is simplified in unionized localities. The matter can be presented directly to the labor leaders and their political intercession urged. They will have no difficulty getting their memberships to support the necessary resolutions with which to memorialize Legislatures.

The right of railroad labor to foment the worst sort of anti-truck legislation must be recognized even while we deplore its hope of thus bettering its circumstances as misguided. But highway transport labor—both organized and unorganized—must consider it a right and a duty to oppose such legislation because of its adverse effect on them as well as on their employers. By so doing it will make politicians increasingly aware that railroad labor is no longer the big bad wolf that will devour little Red Riding Hood unless she delivers the goods.

It will be a good thing for the public at large if this balancing of political forces has at least the effect of relieving legislators from pressure, and so permit them to consider highway legislation solely on its merits and in the full light of facts.

Railroaded Regulation

A RAILROAD-MINDED majority in the Interstate Commerce Commission seems to have succeeded in making a lot more truck operators wish they had never heard the word regulation. The latest disaster to overtake for-hire carriers under Federal

regulation is the decision on driver's hours of service in which the full commission upset the ruling of its own Division 5, charged with handling motor carrier affairs.

Division 5, after extensive and exhaustive hearings, prescribed a maximum hours on duty of 15 in any period of 24 consecutive hours and 60 hr. in a week. On duty took in the time a man reported for work until he was relieved of all responsibility for performing work.

The entire subject was opened for rehearing by the whole Commission upon petition of organized labor. Labor asked for an 8-hr. day and a 48-hr. week and took the stand that if the Commission would not grant this on purely economic and social grounds (although the subject dealt solely with highway safety), it should not prescribe any hours of service until the scientific study of the effects of driver fatigue on safe driving had been completed as ordered by the Commission.

The Commission heard the petition, denied the stay of any regulations and with no better reasons than labor had for asking 8 hr., whittled the daily maximum to 10 hr. of driving and operating. It further ruled that any period of 20 min. or less which the driver for any reason might spend away from the wheel must be considered as driving time.

To judge from the comments aired by truck operators at an American Trucking Associations' conference the Commission ignored the welfare of an industry which Congress instructed it to foster, and could not if it had consciously tried, have done more to encourage unsafe driving. Carrier after carrier referred to the prevalence of turn-about runs: runs



Rock Island used to boast the longest bar in the world but now it's this longest brake tester built by home-town Bear Mfg. Co. It tests all the wheels of any vehicle

which take about 6 hr. out and the same time to return. These could have been handled under the 15 hr. on duty provision. The carriers admitted that these could be handled under the 10-hr. driving provision but it would mean speeding up the trucks and increasing the hazards of operation.

The carriers also brought up the effect on the earnings of drivers. As an illustration, on a turn-around run consuming 7½ hr. each way a driver will have to work six days to earn as much as he would otherwise earn in three days. Labor, it was indicated, seemed to be aware of this unpleasant effect of the I.C.C.'s edict and might be expected to support the petition of the truck operators that they be given a rehearing on the revised rule and an opportunity to show its evil effects. It remains to be seen whether the I.C.C. will honor the petition.

The carriers also protested vehemently against the driver's log (see page 36, Sept. issue) prescribed by the Commission. They labeled it "ingenious but impractical," another miscarriage of regulation. They urged that it be simplified, so that
(TURN TO PAGE 42, PLEASE)

one of the passenger car manufacturers because numerous rumors of important changes have provided a challenge to those who gather advance news but gather it accurately. The rumors have had it that the company would drop its larger car and put out a low-priced unit. Plans were made for a four-cylinder car according to various sources. Our agents have been able to verify none of this but come back with a report of their own that the manufacturer will introduce a truck line and that it will be very ultra in appearance.

Carburetor Combination

No ordinary person would suspect it but one of our trained men picked up a car-

buretor and found therein a governor. As a result of this experience he reports that a major carburetor maker will soon have for sale a carburetor which incorporates a governor.

Two Timer

Scoring twice with a single call an agent reports that an accessory manufacturer is about to release a device for saving gas on engines where governors are used and a valve for hydraulic brakes that cuts off either the front or rear brakes in the event of failure of a line or wheel cylinder.

Atomizer Action

We have a report that does not give

FEARS TO THE GROUND

us any too clear understanding of the workings of a new hot metal spray. It states that the gun will spray powdered metal, thereby cutting the cost of the metal sprayed and at the same time give a finer spray.

Aside to Readers: The November issue of COMMERCIAL CAR JOURNAL will be the 1939 Highway Transportation Show Number. Watch for it.

THE BODY OF-THE-MONTH



By

E. M. Westberg

Body Designer

DESIGN NO. 1 . . . VAN-TYPE BODY . . . ALL MATERIAL COPYRIGHT 1938

Commercial Car Journal herewith introduces an entirely new feature which, its editors hope, will be of practical benefit to fleetmen. This feature will appear in each monthly issue until further notice. The body designer is well known in the metropolitan areas of the East. Besides designing truck bodies he has worked in body shops and knows the practical problems of building bodies. His experience is an assurance to fleetmen that he will not design bodies that are beautiful but dumb—beautiful to look at but impractical from an operating standpoint. Occasionally he'll present an ultra-radical design but he'll warn you that its advertising value exceeds its load-carrying economy. Operators are reminded that all designs are copyright but that arrangements can be made with the designer for procuring complete construction drawings and specifications by addressing The Editor, Commercial Car Journal, Philadelphia, Pa. Next month's Body-of-the-Month will be a C.O.E. Light Delivery body.

VOCATIONAL USES

This unit was primarily designed for Furniture, Warehouse and Moving work. It is, however, adaptable to any type of straight van work.

The unit as shown is approximately 14 ft. long measured at the belt line, 6 ft. 8 in. high inside at the sides by 7 ft. wide inside clear.

Access to the cab is made by a well-type step in the front fender. The rear doors are hinged by concealed strap-type hinges spaced approximately 48 in. apart, the first hinge 6 in. to 8 in. from the floor.

BODY MATERIALS

Body construction materials are conventional for this type of work. Framing is of hard wood with stretcher leveled body steel panels laid over plywood. Interior lining could be optional between solid plywood and slats, depending upon the type of work the unit is used for.

COLOR SCHEMES

There are several color schemes which could be used effectively on this body. A combination or two-toned set up is recommended for this design to bring out the lines to their best advantage. The original design as illustrated was painted rust brown below the belt line and straw above with the lettering and belt molding

Top: This front-end view shows the good driver visibility in the design

Center: Rear doors swing out on concealed strap-type hinges. For economy a single-bar bumper can be used

Right: The streamlined belt molding eliminates the need for striping. Access to cab is via a well-type step

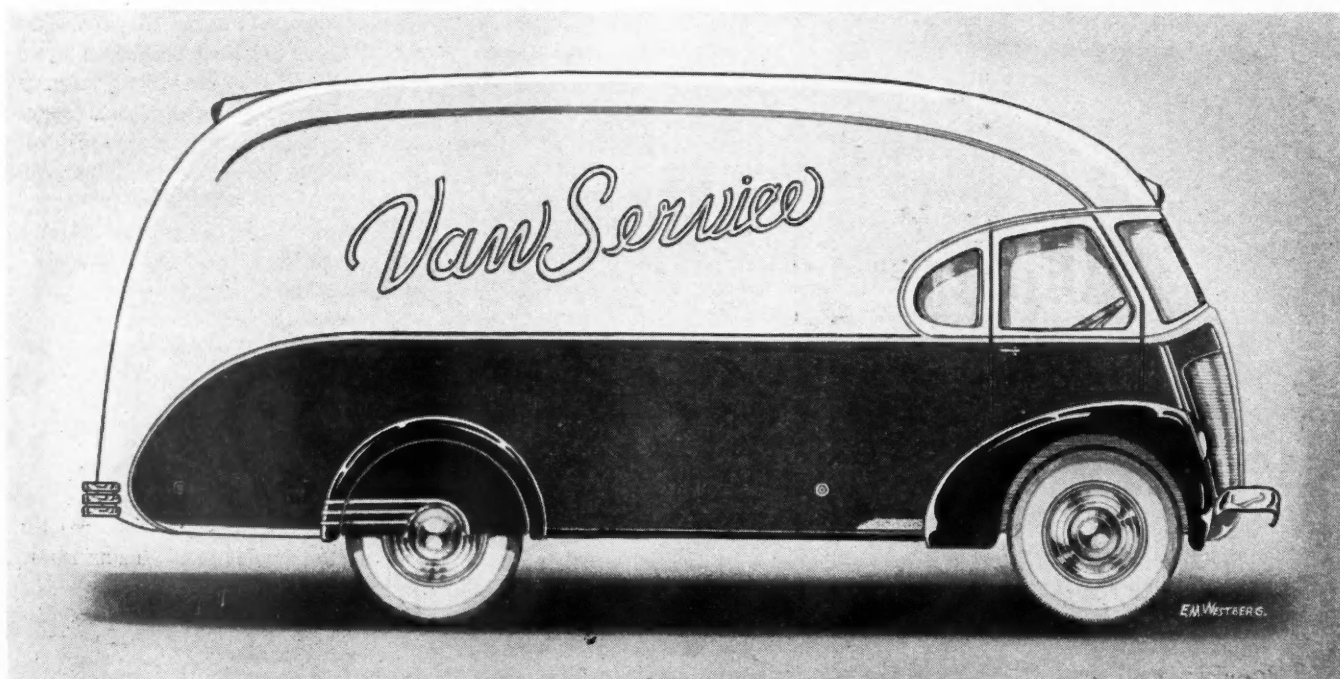
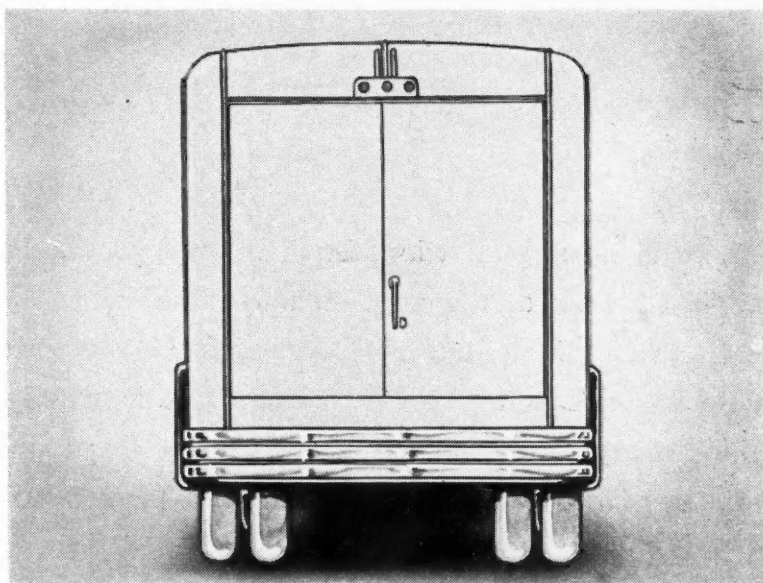
yellow outlined in black. In keeping with simplicity in modern design there is no stripping on the body. Further color suggestions would be two tones of green; dark green below the belt line and light above with polished cast aluminum lettering. The trim molding would be straw as would be the wheels if the chrome plated discs were not used. Black and yellow combination with gold lettering outlined in black or two tones of blue would be very effective color schemes.

ECONOMY POINTERS

The design as shown is definitely a deluxe unit. However, it could be altered slightly and certain materials substituted or eliminated so as not to make it too costly a unit to build. A duck roof could be used in place of the metal roof as shown, the belt molding could run straight through and the rear curves altered slightly. The chrome wheel discs could be eliminated and the three-bar bumper replaced by a painted steel channel one. The wheels could then be painted to match the upper panel or belt molding and the streamlined effect could be obtained by painting the lower panel as shown instead of molding it.

With these changes the cost would be reduced considerably, yet a good-looking unit retained.

BY E. M. WESTBERG



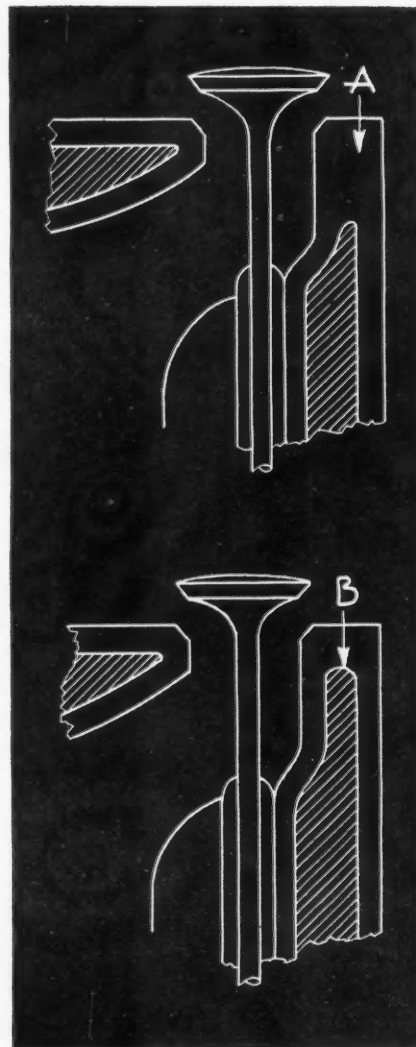
WISE CRACKS ABOUT ENGINE CRACKS

There is a "reason why" back of every cylinder block or head failure due to cracking. This welding expert calls on his 25 years of experience in the automotive field to outline the various kinds of heat cracks, where they most often occur, what causes them and what can be done to guard against this all too common evil



By *Charles Michaels*

President and General Manager The Weldize Corp., Brooklyn, N. Y.



Too much solid metal at (A) may re-at (B). Typical heat cracks occur at

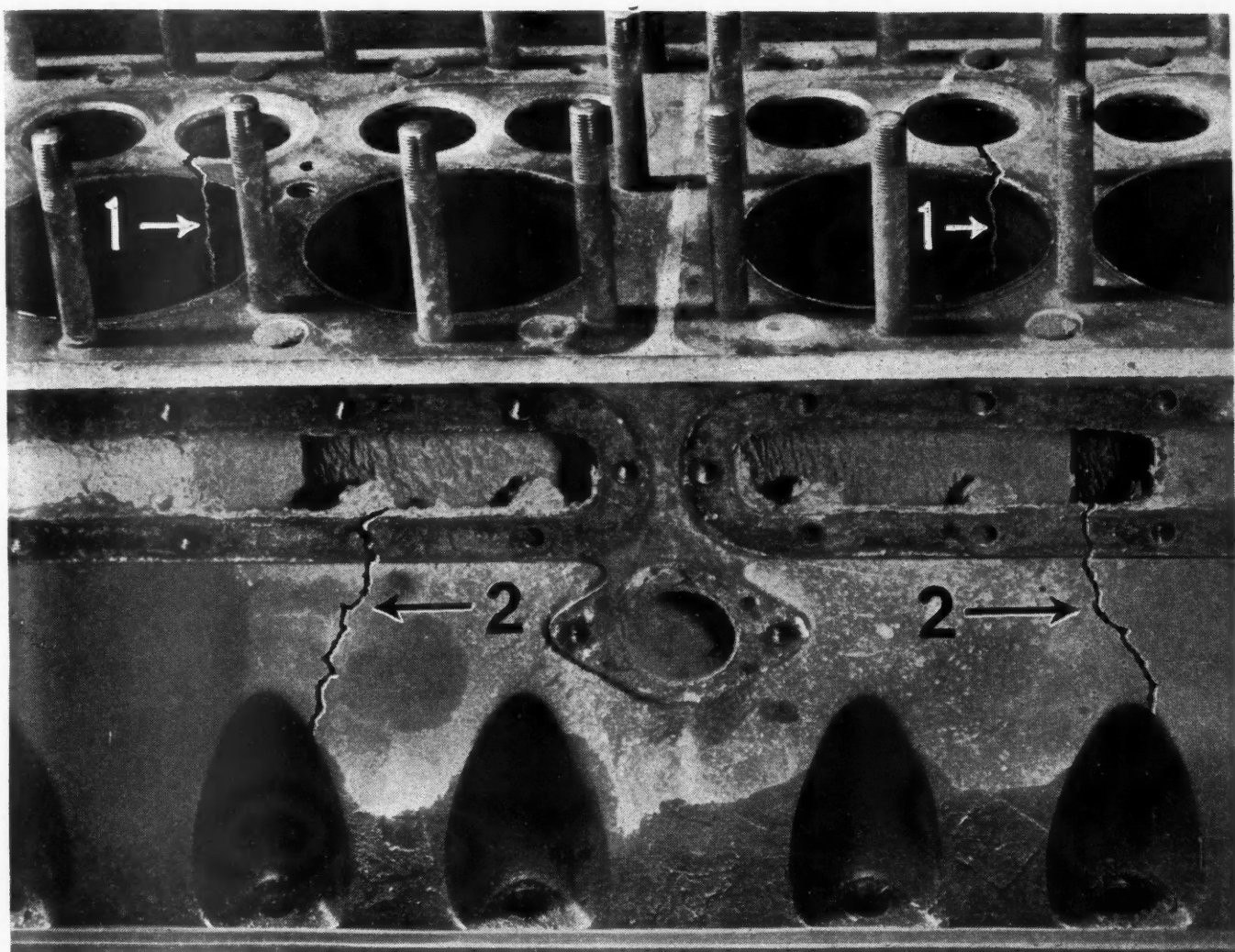
IN order to intelligently consider the reasons for heat cracks in cylinder blocks, and heads of internal combustion engines, we must segregate the different types of failures, in order to recognize their peculiar nature.

Cylinder block and head failures are divided into the following classifications:

- Mechanical.
- Errors in design.
- Freezing.
- Foundry defects.
- Corrosion and Erosion.
- Heat cracks.

Mechanical conditions are responsible for all of the failures due to external or internal strains set up by:

- (1) The failure of some part, such as a broken valve head being pushed through the combustion



sult in a cracked valve seat or heat cracks in other parts. Better design provides water jacketing around the seat as the hot point between exhaust valve and cylinder bore (1) while poorly stayed jacket walls may result in outside cracks (2)

chamber wall or a broken connecting rod or piston piercing the cylinder wall or head.

(2) Loose nuts, especially on base hold down studs resulting in cracked base lugs.

(3) Improper tightening of cylinder head studs, resulting sometimes in a crack through the outside water jacket of block, just at the bottom of the stud. This type of fracture is easily recognized by the fact that it generally assumes the shape of an arc with the lowest point at the stud bottom.

(4) Cutting too deep or wide a recess for installation of valve seat inserts, especially oversizes, and more especially on those blocks with a thin "deck" or top gasket face. The thin wall in the bottom corner of recess—soon pounds through under the influence of valve impact upon

the insert, and results in water leak.

Errors in design show up in many different places. Some types of cylinder blocks have insufficient water jacketing between the valve seat and cylinder wall. In some cases we have found solid metal between these two points for a distance of over $1\frac{1}{2}$ in. This will of course mean a spot which will store up an excessive amount of heat, not only due to the heavy mass but also because the valve seat is not properly jacketed and cooled. This design will more readily produce contraction cracks than more amply-jacketed blocks. This condition of improper cooling has been generally eliminated in modern engines but wherever we find such improper features in cooling design, we can generally find its trade mark, cracked valve seats or heat cracks in other sections.

On some engines, we meet a condition where there is a large area of flat, unsupported, and unstayed water jacket wall. By unstayed, we mean a lack of ribs, or connectors cast between the outside, and inside walls inside of the water space. It is possible that there is some mechanical loss of strength due to such design, but the real source of trouble in this instance is not so much mechanical, as it is a loss of heat transfer between the comparatively hotter cylinder wall and the cooler and thinner outside water jacket wall, resulting in a different coefficient of expansion between the two sections. This results in some cases in cracked water jackets (these cracks generally running in a vertical direction), while engine is in operation, and with sufficient water in the system.

(TURN TO PAGE 63, PLEASE)



Will Be Paid by Commercial Car Journal for Each Shop Hint Accepted. Ideas

SHOP HINTS FROM FLEET SHOPS

1. Small Jack

By Leonard Linde

Drexel Hill, Pa.

A small jack that is extremely handy for installing various parts can be made with a piece of pipe, a discarded ball bearing, a nut and a capscrew. The pipe goes over the capscrew and the nut is threaded on capscrew for adjusting height. A ball used in the top of the pipe will prevent slipping and will keep the pipe from being bent. By flattening one side of the ball the jack will have a steadier grip.

2. Light Extension

By F. W. Green

Oshkosh, Wisc.

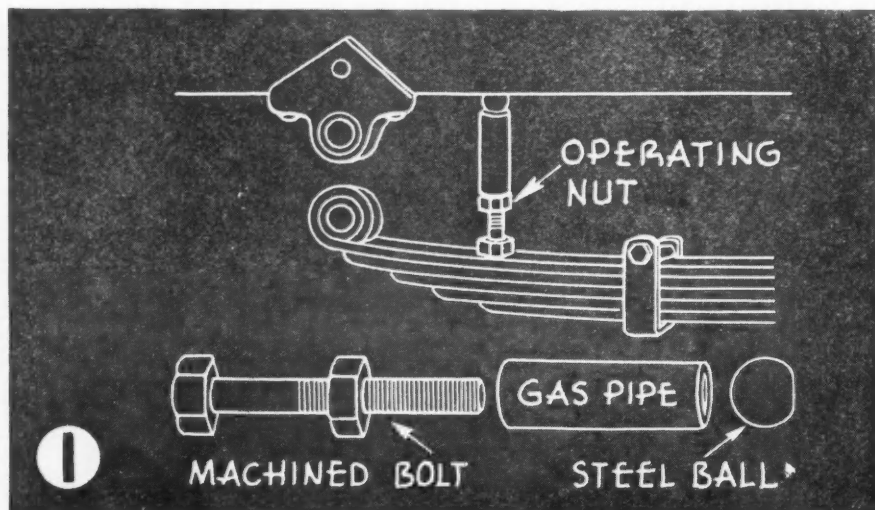
We use an arm that can be extended or put back out of the way for clearance lights on a trailer that has at times a wide load. The arm is held by two brackets and a center bolt. A number of holes drilled in the arm makes the extension adjustable and the bolt holds it securely in any position. When the trailer is empty the arm can be slid back in place.

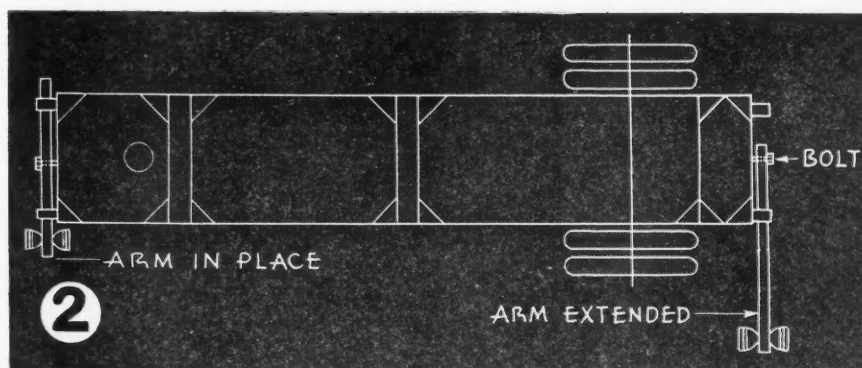
3. Head Puller

By Preston R. Coleman

Rainey Wood Coke Co., Norristown, Pa.

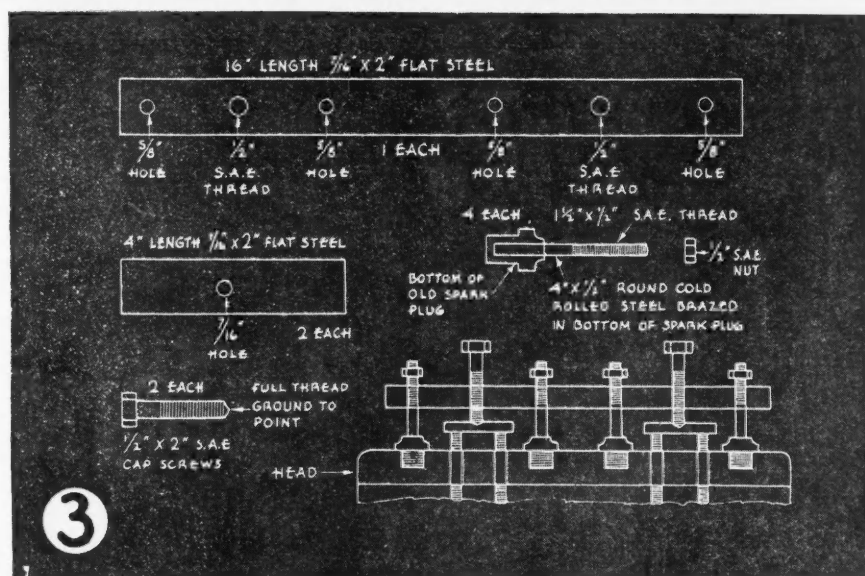
The drawing shows a cylinder head puller which is very good when cyl-





Count — No Matter How Rough. We Will Polish Them Up For Publication

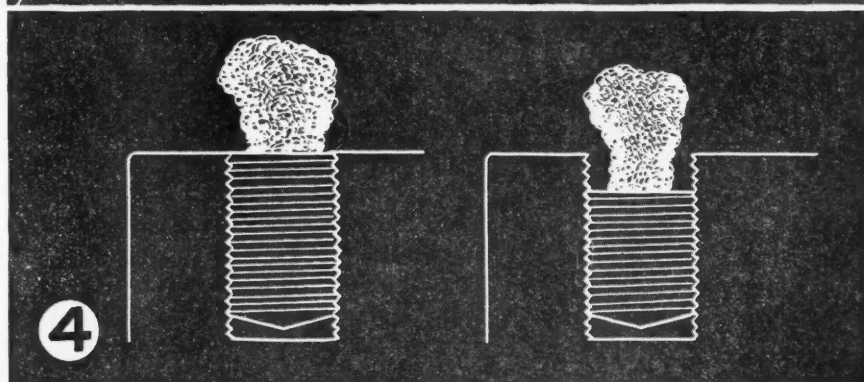
inder heads are stuck as a result of corrosion especially of aluminum heads. We have found that it saves hours of labor and sometimes replacement heads. The flat metal strip is fastened to the head by the threaded rods brazed into spark plug shells. The head is pulled by screwing down the pointed capscrews against the small plates which ride on the head studs. The dimensions given here are for a tool to fit the Ford V8.



4. Removing Studs

By Fred Johnigh
Peoria, Ill.

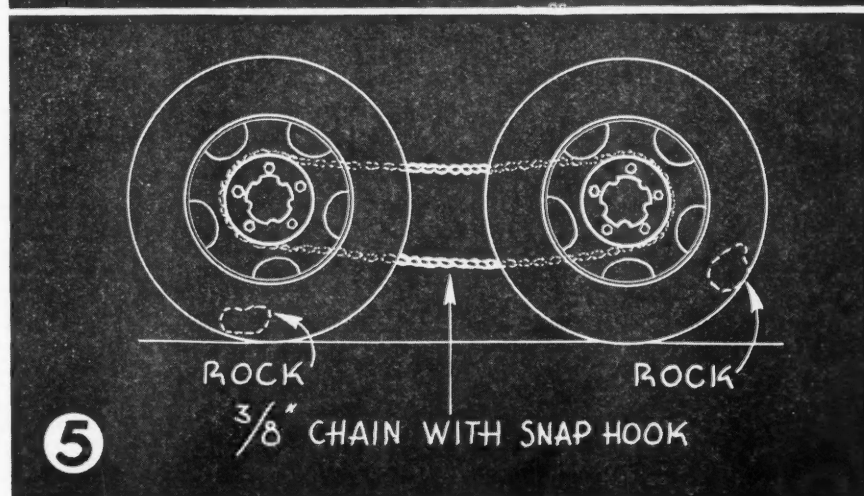
Any shop that has a gas welding outfit can easily remove broken studs by taking a small tip and building up the broken stud with brass. I have found that the stud usually comes out on the second attempt.



5. Rock Remover

By Tommy Bond
Umitilla County, Pendleton, Ore.

We have found that if we install a 3/8-in. chain with a snap hook on third axle jobs that we are able to keep stones from becoming wedged between the dual tires. The chain fits loosely between the dual wheels on each axle. It removes the stones before they get wedged in tight and we have found it especially valuable on the dump and gravel trucks.





By *R. J. Elliott*

Transportation Superintendent, Philadelphia Coke Co., Philadelphia, Pa.

IS IT TIME TO BUY NEW TRUCKS?

A Fleetman Tells How Cumulative Cost Figures Enable Him to Spot Accur-

IS it time to replace our present truck equipment? It is, if by replacing the equipment a lower cost of transportation can be obtained. How can a lower cost of transportation be obtained? By either or both of two methods, that is:

1. Increase the tonnage hauled by the truck equipment.

2. Decrease the cost of operation.

Unquestionably the tonnage hauled would be increased, because:

1. Less delays or repairs will increase the number of days of operation.

2. Faster equipment will increase the tonnage hauled.

The extent to which this will increase the tonnage may be more or may be less; but it is obviously true that new equipment will perform bet-

ter than old. Of course in cases where the equipment is so unsuitable for the work performed it might be economically justifiable to replace the same for the increase in tonnage gained alone. However, in our case, our present equipment is fairly satisfactory, and in order to justify its replacement we must consider how effective the replacement thereof would be in making a decrease in cost of operation.

The cost of operating our motor trucks is made up of the following ten items:

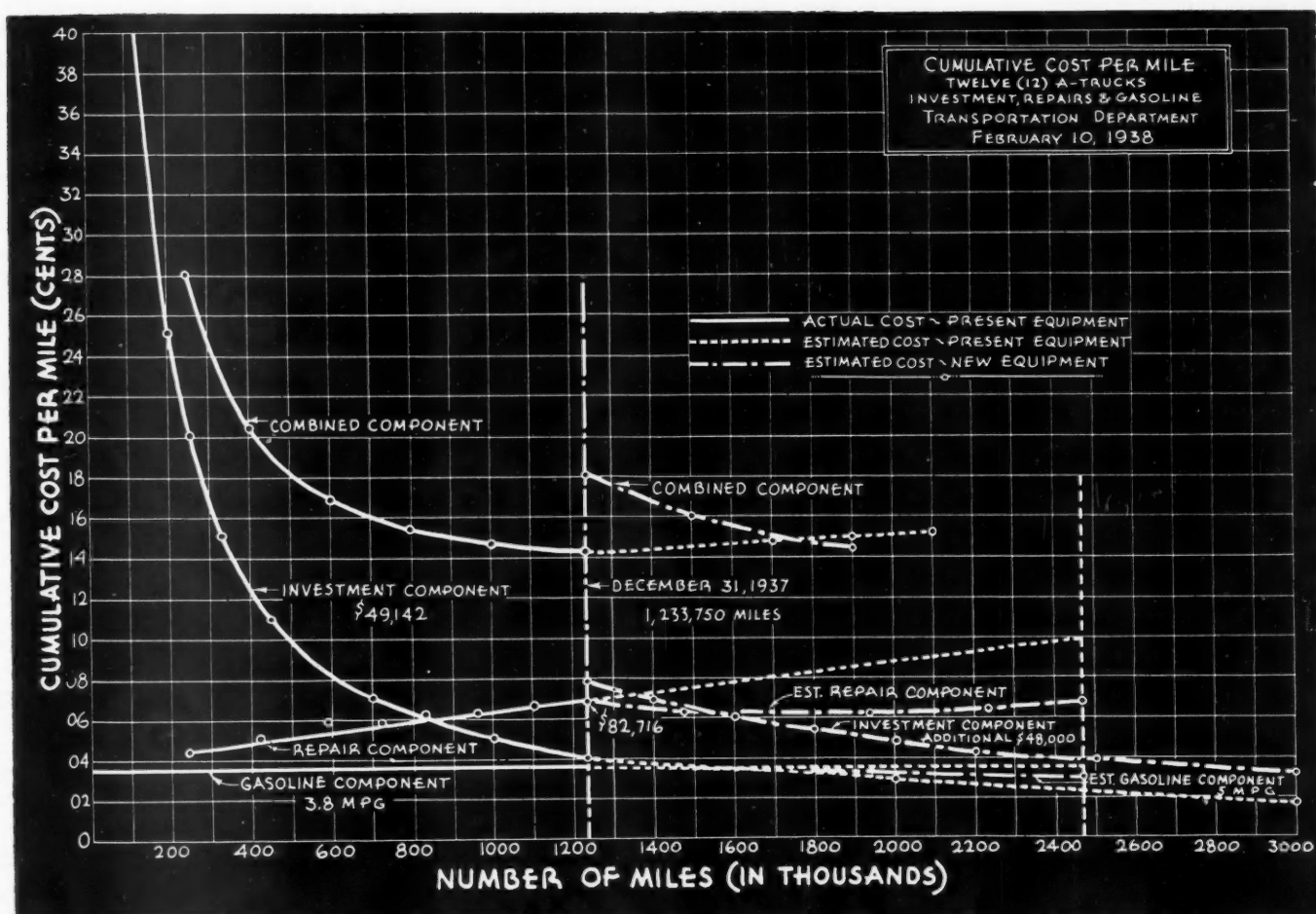
1. Capital expenditure.
2. Insurance.
3. Licenses.
4. Rent, light, heat, power and water.
5. Drivers' and helpers' wage.

6. Garage maintenance.
7. Repair labor.
8. Repair material.
9. Tire expense.
10. Gasoline and oil costs.

A decrease in operating cost may be made by reducing the expenditure for any or all of these items. However as far as the question of retaining our present equipment or replacing it is concerned, four items only are affected. They are:

- Item 1. Capital expenditure.
Item 7. Repair labor.
Item 8. Repair material
Item 10. Gasoline and oil costs.

At any particular time the sum of these items divided by the total number of miles traveled gives a figure which is called the *cumulative* cost per mile. As the mileage of the truck



Charts like the one above for each group of trucks of the same make show the actual total cost from the day the trucks were purchased and predict future costs. Thus fleetmen may spot the low point at which trucks may be most profitably replaced

ately the Most Economical Point at Which Equipment Should Be Replaced

increases the amount of the cumulative cost per mile decreases very rapidly at first. A time comes, however, when it ceases to decline and either remains constant or increases. Before this period is reached there is a point at which the substitution of new equipment would effect a saving. It is obviously true that new equipment is more efficient than old; therefore it is not necessary to keep the old equipment until it reaches the low point of cost, before the replacement would be more economical.

However, let us say here that the cumulative cost represents the total actual or anticipated cost of operation and of course is different from the annual book cost obtained by allocating the capital expenditure over a certain definite period of time,

usually much less than the actual life of the truck. Therefore, even though it may be economical to replace the truck, it will result in an increased book cost during the period of depreciation. This angle is developed later in this report.

In order to show the position of our present vehicles with respect to the four items which have been referred to as affecting the economy of replacement we have prepared a graph from each of the makes of trucks used in our fleet. Upon each has been indicated:

1. Component of cumulative gasoline cost.
2. Component of cumulative repair costs.
3. Component of cumulative capital cost.

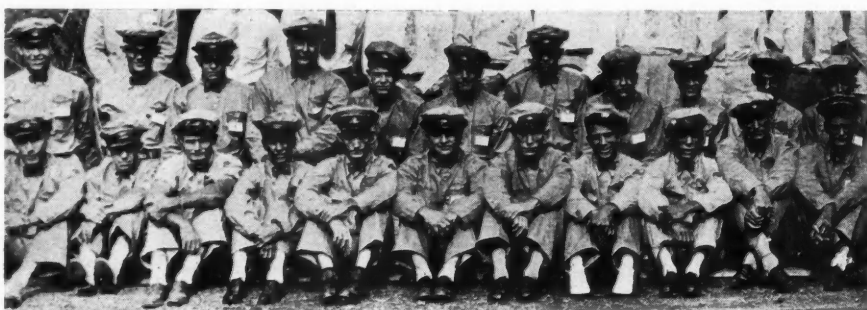
4. Component of combined costs.

These components have been plotted from actual cost to Dec. 31, 1937, and beyond that point have been extended in dotted lines to indicate the continuance of the trend. Beyond the date of Dec. 31 has been plotted in red ink the same component as estimated if new equipment had been purchased on that date. In plotting these components the following estimates have been used.

1. Four thousand dollars cost per truck to replace trucks in retail service, and \$5,000 cost per truck to replace those in wholesale service.

2. New retail trucks will give five miles per gallon of gasoline and wholesale trucks three and one-half miles per gallon.

(TURN TO PAGE 62, PLEASE)



FIVE and one-half years ago we started our Safe Driving Campaign. We adopted rules whereby every driver must sign a safety driving pledge and we were to give recognition to a driver when he had driven six months without a liability accident. Therefore each six months we make awards to our men who have at that time completed a six months' one year, two year, etc., record of driving without a liability accident.

We designated as a liability accident any accident where our insurance company has to pay property damage or personal liability, with the single exception of where the insurance company might find our driver was not to blame and would be willing to so state in writing even though they might make what is commonly known as a "policy adjustment" or "policy settlement" with the claimant. I believe in the five and one-half years there have been two accidents of this nature. The insurance company made the settlements rather than go to the extra expense of court proceedings.

The recognition consists of a certificate from our company stating what record the man has attained. We also give them the certificate and button from the National Safety Council, and furnish them with an all-weather sign for the rear of their truck, procured from the Associated Motor Carriers of Oklahoma. We also supply silk embroidered sleeve emblems indicative of the safety driving record each man holds. A silver bar indicates a six months' record, a gold "1" indicates one year, a "2" indicates two years, etc.

This year our twelve top-ranking drivers represented 58½ years of driving without an accident and a total mileage of 1,161,141.

As a climax of each year's safety

WE PLEDGE OURSELVES TO SAFETY

And the 45 Drivers of This Oklahoma Fleet Kept the Pledge by Holding the Liability Accident Total to 36 During the 5½ Years of a Safe Driving Campaign

By

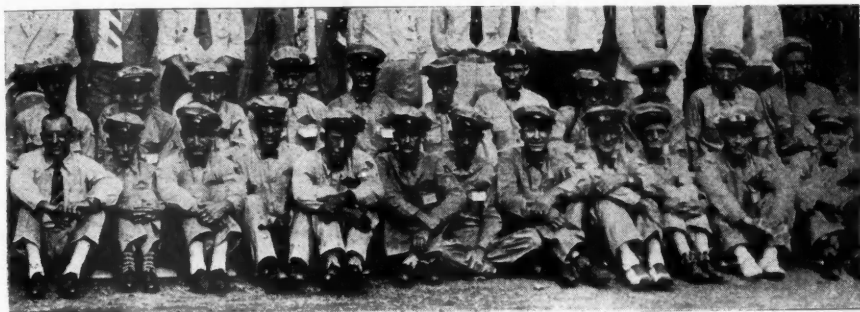
Asa C. Caldwell

Fleet Superintendent, Hale-Halsell Co., McAlester, Okla.



Above and across: These eleven drivers, all with better than 5-year records without an accident, have earned for Hale-Halsell Co. a total of 58½ years, 1,161,141 miles of trouble-free driving. In the usual order they are: Matt Kelling, Albert Sanders, Tom Rogers, Frank Miller, Charles Howeth, Herman Kendall, Donald Butcher, Roy Springer, C. C. Coker, Earnest Snell, C. M. Wooten

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THE PLEDGE

I AGREE

1. To be courteous. To consider the privileges and rights of others at all times.
2. To drive at speeds in keeping with the safety of others as well as myself. Never at any time over 35 miles per hour.
3. To keep always in my proper traffic lane.
4. Never to pass cars on curves, hills, bridges, railroad crossings or any point where the view is obstructed.
5. To keep at least 500 feet behind the cars or trucks ahead of me until I have sufficient clear distance ahead to pass safely.
6. To slow down to 5 miles per hour when approaching cattle or stationary objects, cars or workmen on the highway.
7. To drive slowly and be on the alert for school children when passing through cities or by country schools.
8. To stop at all railroad crossings.
9. Never to descend dangerous hills until I first stop my truck, place in low gear and then descend with truck in control.
10. To always signal before turning or stopping and to look out for the cars behind as well as the cars ahead.
11. To only drive when in full possession of my faculties.
12. To be sure my brakes, lights, horn and tires are in good condition each day and to check my safety equipment daily: (a) fire extinguisher, (b) torches, (c) flags, (d) safety matches.

Date

Driver's Signature



At top and across: Hale Halsell's 45 drivers gather once each year at company headquarters to attend an all-day safe-driver meeting, hear the latest that company executives and guest speakers have to offer on safety subjects. Liability accidents are taken seriously and when a driver becomes involved in two, he is taken off the truck, placed in a warehouse when there is room

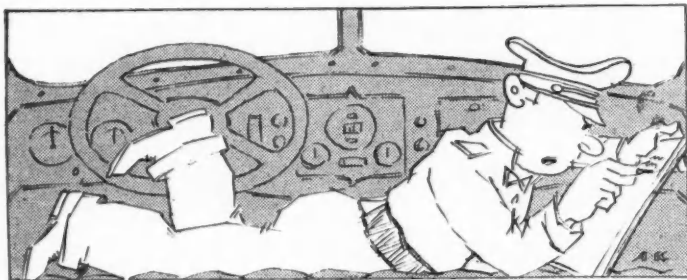
driving effort we have an annual all-day meeting here at McAlester. All drivers as well as branch house managers and executives attend. At these meetings we spend the morning in presenting awards to drivers who have earned them, have a special guest to talk on Safety Driving and usually have a moving-talking picture on the same subject. During this morning session we also review and analyze all accidents of the previous year and endeavor to find out how each might have been avoided. To assist in this discussion we have a large board with streets and highways painted on it and use toy trucks and automobiles to re-enact each accident.

We have a banquet at the noon hour and usually at that time have some special entertainment. At one of the meetings, for example, we brought "Tony Baloney" Lawrence here. He is the champion liar of Oklahoma and an entertainer and after-dinner speaker of extreme popularity.

In the afternoon we spend about three hours discussing our maintenance problems and how we want the drivers to improve the care of their vehicles. This discussion takes place in the garage so that we may have before us any and all truck parts which might be up for discussion. Often at this period we show educational or technical moving pictures pertaining to the operation and care of trucks.

Each year at these meetings we have been fortunate in having some outstanding guest or guests to assist in making the meeting more worth while. Some years we have had executives of some of the large automotive companies. Last year we had the State Commissioner of Public

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A TRUCK SPINNER SPINS A GRIPE

... and in this open letter to his "Congressman" puts his foot in the pot and rides the governor with a load of complaints about road conditions that truck drivers meet daily and pulls up to unload some horse-sense cures of his own making

Orlando, Florida,
October 35, 1938.

The Hon. James X. Mac Kafferty,
Mac Kafferty Building,
Wormwood City, _____.

Dear Jim:

Your letter came this morning, sandwiched in between enough grief to fill a 30-ft. box. Number 73 was three hours late in Jacksonville, Wednesday night, because the driver thought he was running a slaughterhouse instead of a corn-popper. Plowed right through a bunch of cattle on the road in the fog. So, amid all the kicks from shippers, in rolls your letter. Well Jim, I just kicked out the clutch and let old man trouble roll while I got a good belly laugh.

So you got yourself appointed "Chairman of the State Highway Safety Council"? "My friends insisted that I take the appointment offered by the Governor," says you. "The State elections sure went right for you," says me.

However, considerin' you went to the trouble to write and ask if I had any suggestions about highway safety I guess you aren't planning on doing a "Pouter Pigeon" at the formal dinners. On this basis I'm going to take the liberty (?) of unloading some of the grief that the long haul drivers get shoved at them every night, in every State.

"Of course our State is an exception," you howl. Well, if it is, then there's 49 States grabbin' for PWA gravy.

Well Jim, here's where I stick

my foot in the pot and ride the governor. I've got quite a load aboard and if you haven't got torque enough to get over the hump then get a man with enough bore and stroke between his ears to front for you.

So you can check your bill-of-lading on this load of grief we'll number the items:

1. DRIVERS WHO RUN AMBER FOG LIGHTS on clear nights and don't turn them out when meeting traffic come first if you judge by the quality of the driver's cussin' they get. Fog lights are one of the hardest lights on the road to meet. Most of them are set too high. A high light doesn't show the road in fog—and it blinds everyone meeting it on a clear night. They're for what the name means, "F O G." About a fifty-buck line ought to educate some of the public. Or try boiling in oil.

2. RED NEON "BEER" AND "EAT" SIGNS. Wouldn't it be a bright idea to make them some other color besides red, green or yellow? They're confusing, especially in fog, rain or snow, and hide traffic lights. Sure, a truck should slow to a crawl if the driver even suspects there's a traffic light in the county. Most of them do, but why in hell you should expect them to be Boy Scouts unless you're willing to do your Nightly Good Turn is something I couldn't understand, if I didn't know

(TURN TO PAGE 60, PLEASE)



A traffic light lost in neon weeds

DETROIT'S long-entrenched truck battle over the problem of city-owned vs. leased equipment ended last month when Department of Public Works Commissioner Henry E. Beyster secured approval of the city council for the purchase of the first 20 of a tentative 50 trucks to be used in the street and alley cleaning division.

A last-minute rate reduction on the part of the Knights of the Iron Horse, politically powerful organization of private truckers which has virtually controlled the city's trucking operations, failed to move the commissioner. The per diem rate on 10 yard trucks had been raised this year from \$18.90 to \$21 and in a final compromise move a rate of \$16.50 was offered.

Failing in this attempt, the Knights of the Iron Horse, through their president, Herman J. Meyer, charged the commissioner with being a super salesman for General Motors, his former employer, and initiated a move to secure the commissioner's ouster on the grounds that he is not a resident of Detroit, but of Grosse Pointe.

As the bid awards were finally arranged, General Motors Corp. won the contract for approximately half of the equipment, consisting of five 25,000-lb. trucks and 10 tractors. The Fargo Motor Corp., Chrysler subsidiary, is to supply five 20,000-lb. trucks, while the Fruehauf Trailer Co. was awarded the contract for 10 trailers. After a 60-day trial period, which is expected to show the relative merits of each type, 30 additional units will be purchased to complete the initial fleet of 50.

It was contemplated that 143 of the city's 293 hired trucks would be laid off within the month, and that a city-owned fleet would eventually handle all operations in the street and alley cleaning division.

Events leading up to the move to purchase new trucks involved chiefly the high rates which the city had been paying private truckers. Until recently the per diem rate was fixed at \$18.90 for 10-yd. trucks and \$11 for 5-yd. vehicles. But in the 1938 budget, in spite of the threat of outright purchase, the Council was persuaded to raise the rate to \$21 and \$12 per day respectively.

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DETROIT

VOTES

ITSELF A FLEET

City Council in Dramatic Economy Move OK's DPW Fleet to Replace Contract Trucks in Street Cleaning Division



Henry E. Beyster, Department of Public Works Commissioner, City of Detroit

COOL HEADS

A STORY OF ANTI-FREEZE

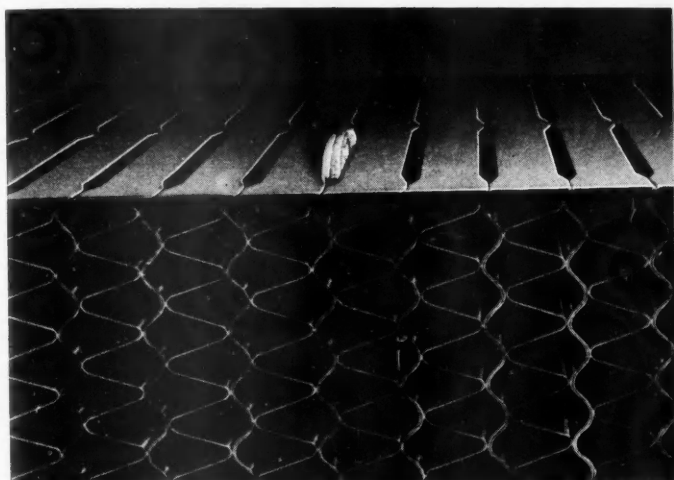
NEWS FLASH... ZERO WEATHER GRIPS ALL NOW

When freezing weather comes these days it doesn't present the problems that confronted fleet operators in the old days. Today they have a way of preparing for cold weather. No longer do they need to carry around a couple of spare seidlitz powders to relieve the headaches brought on by boiling radiators, cracked engines and burned out valves that resulted from the intense heat generated in the engine when water alone was used as the cooling medium. Intense is the word because in a six-cylinder engine going 30 m.p.h., 4500 fires are kindled and extinguished every minute. Why, if this heat were allowed to accumulate for a few minutes, and the engine could be kept running, the engine would soon become a puddle of molten metal. There must be an efficient means of controlling the fires.

Plain water was the controlling medium in the early days because it was cheap, flowed freely and had greater ability to absorb and carry off heat than other liquids. But it froze. So it had to be drained between runs in the

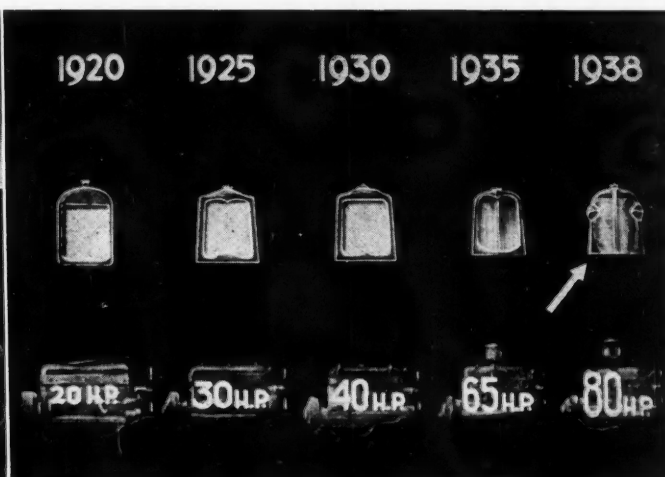
winter-time and the radiator refilled with hot water. Tea kettles were a common sight in those days. But water presented still another problem. In contact with iron it rusts. Put your finger in a radiator spout and see for yourself.





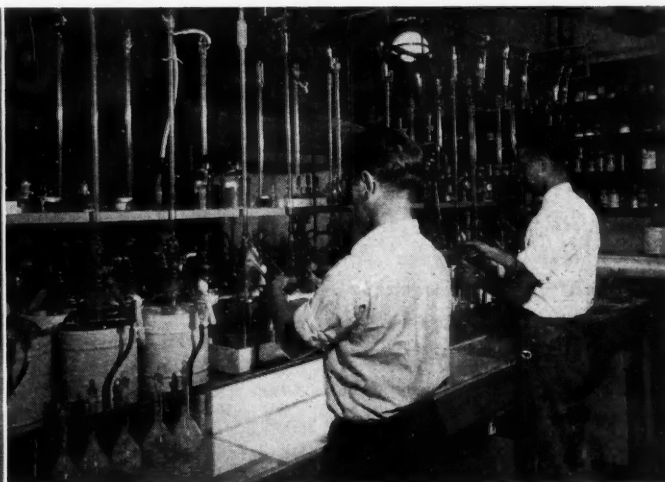
In the iron water-jacket of an engine, the formation of rust serves to build up a film which is a remarkably good insulant that retards the transfer of heat, or the flow of heat, from the hot engine fires to the water. In time particles of rust are carried by the water into the fine tubes of the radiator where they clog and jam the works, and stop good circulation. It doesn't take very much rust to clog the fine passages of a typical radiator. The passages in the radiator section shown above are only as thick as two thin dimes. As in the engine's water-jacket accumulated rust insulates the radiator walls, hinders the flow

The cooling efficiency of modern radiators is better because of refinements in radiator core design, smaller water passages, thinner metals and smaller air passages. These smaller passages and radiators must be kept clean because in a modern car at least 3000 gal. of water are pumped every hour around 270,000 fires to keep the engine from burning itself out in a frenzy of roaring heat. Radiator protection is as important in summer as it is in winter. A motor improperly cooled in the summertime, especially at today's speeds, can be greatly reduced in efficiency—even seriously damaged. Engineers and chemists



of water and slows up heat transfer from the water through the radiator walls to the air. In the transfer of heat water did a satisfactory job in the early days. Radiators and cooling systems were of generous proportions then for the size and horsepower of the engines; water passages were larger and did not clog so easily. But in the last 20 years horsepower outputs have been increased and the amount of heat generated has increased tremendously. At the same time radiators, if anything, have been made smaller; style changes have cut off air supply—forcing cooling systems to operate with lower margins of safety.

knew they could prevent freezing. They were positive they could stop rusting, but could they do these things without decreasing the capacity of water to transfer heat? So the chemists went to work—not to develop an anti-freeze alone but to find a round-the-year radiator conditioner. It took time, skilled research, men and intricate apparatus. Then out of the maze of chemical elements and their combination came the answer. The marvel of modern chemistry is apparent in the fact that one answer was produced from the strange combination of air, coal and water. From these were obtained elements which, when

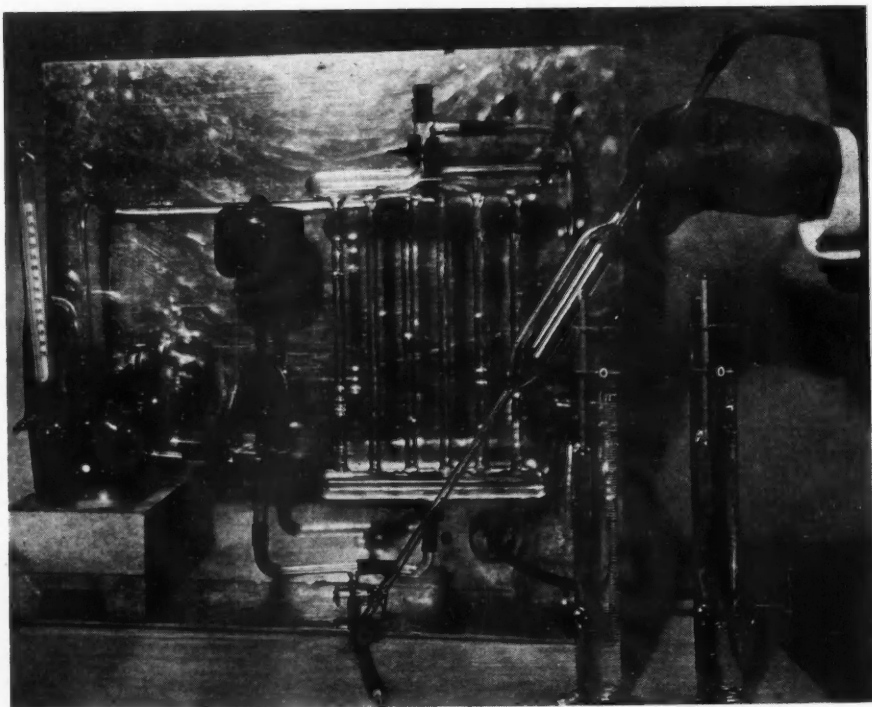


COOL HEADS

(CONTINUED)

combined with the proper catalyst, gave a material and a product. This product is under test at right in one of the duPont laboratories. On a dynamometer, under full load with spark advanced the engine, with water in the cooling system, is purposely made to knock. Some of the water is drained and anti-freeze liquid added. As the quantity of anti-freeze is increased the knock diminishes and gradually disappears. All due to more effective cooling which permits the fuel to burn more evenly and smoothly. Apparently even in summer, when the cooling demand is greatest, water can be improved. Over heating is responsible for more cracked blocks than freezing.

In another test, also at right, is proved the fact that the anti-freeze does not separate from the water in the cooling system and evaporate. Losses due to evaporation are practically negligible. Most of the losses are due to mechanical causes of various kinds. There is expansion as the liquid warms up and then there is after-boil, caused by residual heat after the engine has stopped running. The contrivance at right is a graphic layout in glass of an automotive powerplant. The flask and heater at left represent the engine. Liquid which boiled over and liquid which remained in the system are checked with hydrometers at right and show no change in zero anti-freeze protection of the liquid remaining or the liquid boiled over. The anti-freeze has not been separated from the water. Other laboratory checks have shown that losses



made through the over-flow pipe of the radiator can be prevented by the use of a surge tank which can be easily and economically constructed.

For photographs and descriptive data used in the presentation of the foregoing pictorial feature Commercial Car Journal is indebted to the Research Laboratories (Zerone Division) duPont Experimental Division

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FREE

BOOKS

BOOKLETS — PAMPHLETS — CATALOGS

... a special selection made by the editors ... for your copy write direct
to the address given ... to hurry it along mention Commercial Car Journal

Lighting Encyclopedia

Fleetmen who have found the various state and interstate lighting requirements confusing, to say the least, can count themselves lucky to find grouped in one catalog a complete Interstate Commerce Commission chart together with detailed lighting requirements, individual state specifications and a state approval chart. All this, together with a description of their own complete line of lighting fixtures, comes in K-D's new lighting catalog. It's an asset to any fleetman's library. Write to K-D Lamp Co., 610 W. Court St., Cincinnati, Ohio. Ask for Catalog No. 38.

Bearing Lubrication

People who take their maintenance seriously will find a lot of useful information in Texaco's new booklet about ball and roller bearing lubrication. For one thing, there's a complete bearing lubricant recommendation chart. In addition there's a section devoted to the construction features of ball, roller, quill and needle bearings, and there's also a discussion of lubricant seals and the problems of venting and cleaning. Address the Texas Co., 135 E. 42nd St. for your copy.

Component Parts Data

To a large operator, interested in engineering details about axles, transmissions, wheels, axle housings and special items, a new Clark bulletin, just off the press, should be a real help. Complete details of the company's products are given in

handy loose-leaf form making it easy to keep the material up to date. Each book is earmarked and numbered, ours is No. 341, and a limited supply is still available where they can do some good. Address the Clark Equipment Co., Buchanan, Mich.

Getting the Most from a Lathe

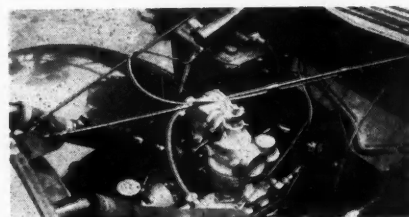
Practically all important automotive machining operations are illustrated and described in a 16-page booklet containing nearly 100 illustrations just released by the South Bend Lathe Works, South Bend, Ind. Ask the Technical Service Dept. for Bulletin 33-J.

Wiring Details

Up-to-the-minute information on ignition cables, battery cables, wiring assemblies, wire, terminals, in fact anything to do with wiring will be found in a new catalog on the Newtype and Nokrode lines. Fleets may find among the many practical assortments featured, types that fit their particular needs. Your copy is waiting. Write P & D Mfg. Co., 1902 Steinway St., Long Island City, N. Y.

Goodrich Battery Promoter

Practical data on the merits of the new Goodrich line of truck batteries, all containing the Kathanode spun glass retainer mats, is given in an informative booklet published by the B. F. Goodrich Co., Akron, Ohio. Ask for your copy of the truck battery booklet.



Algas (the blended butane-propane fuel) got a crack at cross-country driving recently when Bohn Aluminum and Brass Corp. and American Liquid Gas Corp. took this Ford V-8 truck on a 3000-mi. run. With a two-ton load aboard the truck averaged 34.91 m.p.h. and gave an excellent performance record. Note the air-fuel mixing valve which replaces carburetor and fuel pump



Dryice, reduced to a gas, forms a convenient and economical means of carbonating beverages, so this Mack "cold foots it" around the Chicago area with a hefty load



When one of these Kendall demonstration coaches pulls in, better give it more than a casual look for inside is one of the most complete lubrication set-ups ever assembled

New Truck Registrations by Makes by Months

	Auto-car	Brookway	Chevrolet	Diamond T	Dodge	Federal	Ford	G.M.C.	Hudson	Inter-nat'l	Mack	Plymouth	Reo	Sterling	Stewart	Studebaker	White Indiana	Willys	Misc.	Total
January.....1938	129	64	10,137	335	3,070	118	9,114	1,746	99	4,501	254	668	216	16	27	158	288	176	227	31,343
January.....1937	130	102	13,975	828	3,673	199	16,230	2,749	278	6,098	382	208	344	22	89	167	583	125	300	46,482
February.....1938	95	57	8,991	338	2,622	109	7,687	1,401	81	3,763	217	582	182	9	19	144	316	138	238	26,969
February.....1937	112	115	7,777	580	4,904	205	16,100	2,987	355	5,138	363	692	305	25	101	215	538	57	292	40,859
March.....1938	110	86	12,233	380	3,666	136	9,898	1,965	77	5,256	352	769	283	17	31	161	394	174	303	36,291
March.....1937	179	140	16,924	815	6,337	236	20,386	4,122	539	5,689	476	1,104	484	23	147	465	647	76	299	59,069
April.....1938	119	127	11,719	393	3,575	136	9,287	1,917	78	4,810	366	757	251	26	43	184	369	175	341	34,672
April.....1937	228	184	21,974	863	3,935	258	22,241	4,671	482	6,710	586	1,143	378	43	118	706	809	107	346	65,782
May.....1938	193	159	10,659	360	3,171	93	8,918	1,810	68	4,281	382	662	287	25	45	221	384	168	340	32,206
May.....1937	197	183	20,146	816	5,893	294	19,884	4,416	489	7,071	579	1,447	411	27	120	701	783	77	440	63,974
June.....1938	235	116	9,912	332	3,055	95	8,427	1,730	65	4,045	317	681	213	21	38	158	308	196	288	30,232
June.....1937	197	139	16,703	644	6,048	223	17,414	4,035	554	6,681	536	1,634	435	33	92	643	668	82	374	57,135
July.....1938	129	99	11,226	382	3,236	117	9,425	1,675	67	4,782	347	660	264	34	36	116	337	182	362	33,476
July.....1937	281	152	17,809	764	6,508	225	18,934	4,237	579	7,539	622	1,715	480	34	107	622	667	99	312	61,686
Seven Months.....1938	1,012	708	76,369	2,623	22,835	811	63,992	12,444	545	32,055	2,258	4,880	1,735	148	241	1,157	2,404	1,227	2,128	229,572
Seven Months.....1937	1,327	1,015	117,927	5,546	38,139	1,664	133,886	27,808	3,382	45,957	3,577	8,190	2,918	220	784	3,587	4,756	623	2,479	403,763
% Change... 7 Mos.	-24	-30	-35	-53	-40	-51	-52	-55	-84	-30	-37	-40	-40	-33	-69	-68	-49	+97	-14	-43



NEW PRODUCTS ON PARADE

Teleoptic Combination Signal

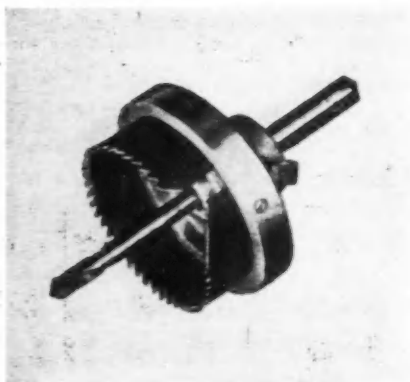
Operators with fleets of small trucks may find a directional signal to meet their requirements in the Teleoptic deluxe rear signal—a combination stop, tail, and directional signal light. Made of brass, with glass lenses, the light also has provision for license plate illumination and, therefore, is adaptable for substitution of the regular stop and tail light.



Visible 125 ft. day and night, the Teleoptic deluxe rear signal is operated from the "Finger-Flip" control mounted on the gear-shift lever in place of the regular knob, or on the steering column. The Teleoptic Co., Racine, Wis., is the maker.

Misener Rotary Hack Saw

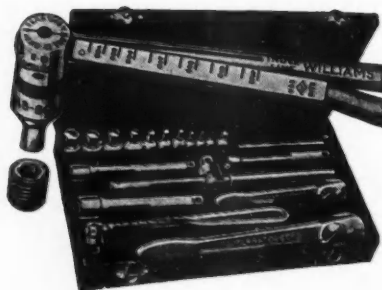
Adjustable features of the Misener rotary hack saw makes it a particularly useful tool for installing heaters, radios and other automotive accessories. It is adjust-



able for any size hole normally desired, is moderately priced and replacement blades are available at low cost. For full details write the Misener Mfg. Co., Inc., 326 E. Washington St., Syracuse, N. Y.

Williams Hollow Screw Set

A new Williams wrench set, No. AL-101 provides virtually everything one could ask for in handling hollow screws with hex drive opening. It consists of 10 detachable



bits for all hollow set screws $\frac{1}{4}$ to $1\frac{3}{8}$ in. and cap screws No. 8 to 1 in. Also included are ratchets, flex and sliding T handles, extensions, and the new Williams torque "measurrench" which indicates right hand turning torque and prevents injury to screws and bits. A special circular can be obtained by writing J. H. Williams & Co., 75 Spring St., New York.

Phenol Disk Sanding Pads

Fleetmen who have had difficulty in obtaining just the right amount of flexibility in their power sanding equipment better get in touch with the new Sioux phenol disk pads. A universal 5-in. holder accommodates the pads in 5, 7 or 9-in. sizes, giving various degrees of flexibility. Those who want to split hairs even further can use, say, a 7-in. pad with 9-in. disks to get just what they want. For details, write Albertson & Co., Inc., Sioux City, Ia.

Adjustable Fender Guides

Casco Products Corp. Bridgeport, Conn., has recently introduced new adjustable type fender guides to suit variations in fender heights. The height adjustment, which is 12 inches to 19 inches, is easily accomplished by collapsing or extending the telescopic rod.

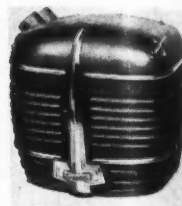
The guides are made with universal brackets to fit all cars. Eighteen modernistic and novel ornaments are offered in illuminated models, and also the non-illuminated models with theft-proof ornaments.

Amco Clutch Facings

To eliminate "clutch hang-up," two new grooved type facings are now offered in Amco Dreadnaught clutch facings. The maker, Asbestos Mfg. Co., Huntington, Ind., has developed both radial and circular groove facings that prevent the possibility of clutch sticking.

New Goodrich Heaters

Leading the line of hot water heaters offered by the B. F. Goodrich Co. for 1938-39 is the new Model 81. Twin-fan heat circulation as well as double outlets for defrosters are features.



Circular foot-warmer openings are located at the rear corners of the heater. Temperature regulation is controlled by a valve governing the flow of hot water. There are no rough edges and the heater is trimmed in statuary bronze and chrome. Further details of all Goodrich heaters may be had from the company at Akron, Ohio.

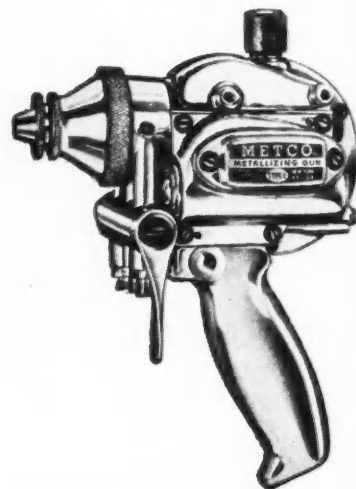
Sterling Gyro Sander

A new-type portable electric sanding machine is announced by the Sterling Products Co., 2457 Woodward Ave., Detroit, Mich. The machine is sold under the trade name Sterling Electric Gyro Sander and is not intended to replace pneumatic or electric sanders manufactured by the company.

The movement of the sanding pad on this machine closely simulates the hand sanding motion. The abrasive paper attached to the bottom of the pad has a movement whereby each particle of the abrasive moves in a centroid of approximately $\frac{5}{16}$ in. The outstanding features of this movement are extremely high cutting speed, uniform finish and the elimination of chasing and graining effects.

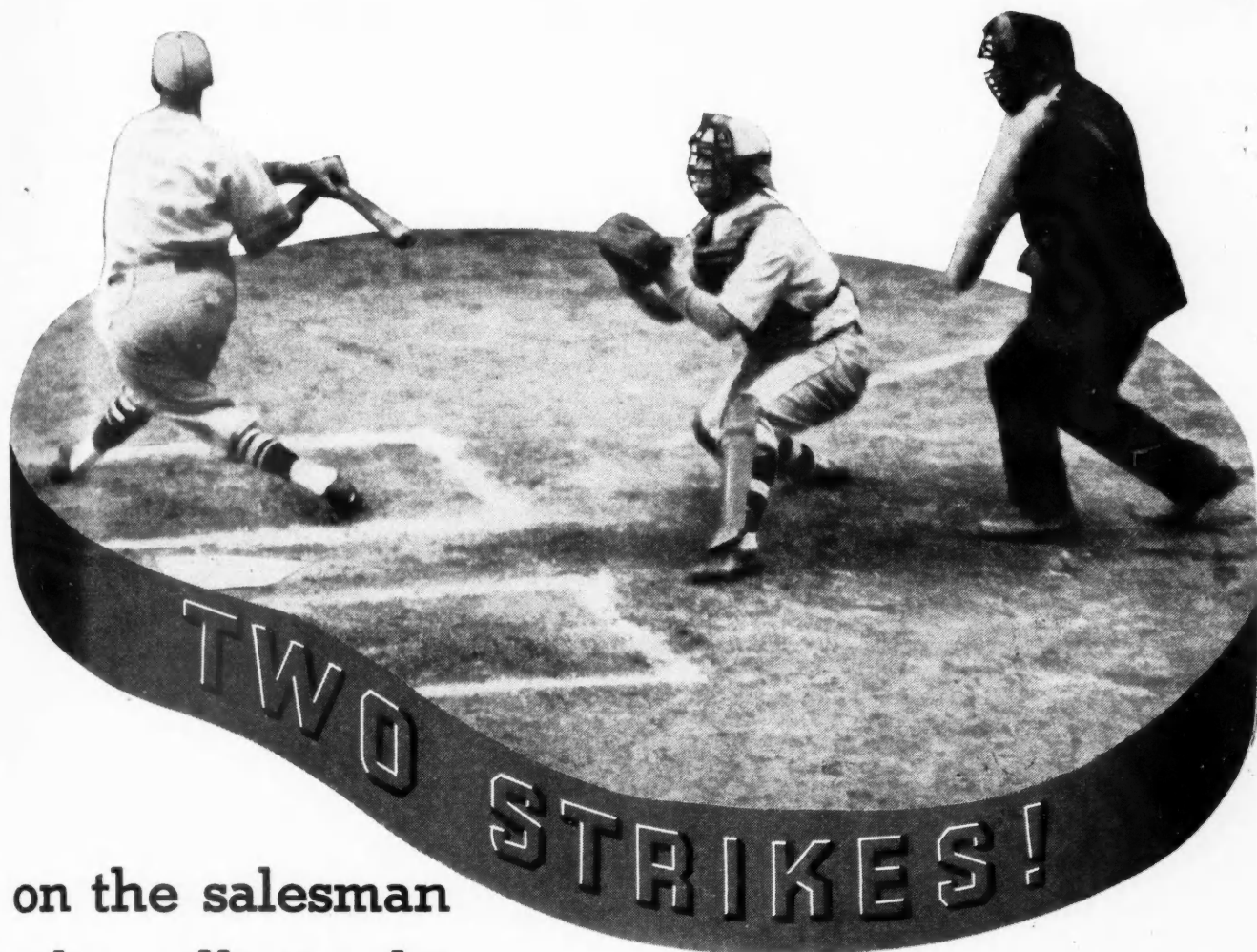
Metco Metallizing Gun

The new type E metallizing gun made by the Metallizing Engineering Co., Inc. New York, is extremely light, weighing



only $3\frac{3}{4}$ lb. The gear case is made of Dow metal and ball bearings are used throughout. Worms are cut integral with their shafts and are ground after hardening.

More New Products on Page 38



on the salesman
who sells trucks
without

Hydraulic Braking

Which would you rather have: three chances to connect with a sale—or just one?

There's no doubt that the truck without Hydraulic Braking has far fewer prospects than the truck with Hydraulic Braking. That's because millions of operators and drivers have learned that Hydraulic Brakes are thoroughly reliable, that they provide a consistently easy, gentle pedal, that they assure smooth equalized stopping and retain

their adjustment, while needing little attention and no lubrication.

In other words, they have learned that Hydraulic Braking is better braking. And they want the best, especially when it costs no more!

Thus it's easy to come to a conclusion. It's this: Hydraulic Braking sells trucks! Look at registration figures—you'll agree!

HYDRAULIC BRAKE CO.
Detroit, Michigan

LOCKHEED HYDRAULIC BRAKES

Officially serviced throughout the nation by Wagner Electric Corp.

NEW PRODUCTS

(CONTINUED)

McQuay-Norris Gage

A new Centromatic cylinder gage for measuring cylinder size, taper and out-of-round, has recently been introduced by the McQuay-Norris Mfg. Co., Cooper & Southwest Ave., St. Louis, Mo. An outstanding feature of the design of this instrument is its ability to function over the entire length and circumference of the cylinder. Consequently, the maximum wear usually just below the upper ring ledge, can easily be determined and any pockets or distorted areas in the cylinder wall can be dis-

covered. For complete information and prices, write the manufacturer.

Wagner Brake Parts Kits

Wagner Electric has recently added several new combinations to its various assortments of Lockheed brake parts. These assortments are arranged in steel-drawered cabinets and may be selected for either a single make of car or truck or any number of specified makes. The adjustable cabinets in unit sections provide storage space for additional parts as they may be needed. Bulletins HU-1 and HU-2 describe cabinets and assortments and may be had for the asking. Write Automotive Parts Division,

Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Mo.

Speed Limitor

A new device known as the "speed limiter" is being manufactured by the Speed Limitor Co., 1017 Franklin St., Detroit, Mich., and is now available for Ford and Chevrolet vehicles. Installed between the carburetor and the inlet manifold, it controls the throttle valve so that it cannot open beyond the desired point. The setting is made simply by inserting a key in the lock which forms a part of the device.

The Limitor is sealed on, cannot be jimmied and affords an economical method of controlling speed. Write the manufacturer for full details.

Casco Grille Guard

A new rust-proof grille guard of the triangular type has just been announced by Casco Products Corp., Bridgeport, Conn. It clamps right on the bumper, fits all cars



and most trucks, and is well worth its low cost in grille protection. For 75 cents extra, there's a swinging rear end model that lowers easily to permit access to the rear compartment of passenger cars. Write Casco for full details.

Water Soluble Grease Solvent

Creatasop is the trade name of a new concentrated liquid grease and oil solvent which is adapted to dilution with water for all grease and oil removing purposes, a solution of one part Creatasop in ten to fifteen parts water affords a cheap but very efficient grease and oil solvent. It may be applied by hand or used in an air siphon sprayer upon greasy surfaces such as floors, walls, machinery, engines, etc., and washed off with water afterward from a hose.

Mechanical parts may be washed in the solution whereby grease and oil is removed. It is said to be absolutely odorless and will not fire or produce fumes. As a mechanic's liquid hand soap a small amount applied to the greasiest hands will quickly dissolve all soil and may be washed off with water. It will not harm the skin. Write Creative Chemical Co., 4618 Friendship Ave., Pittsburgh, Pa., for details.

(More New Products on page 42)

'39 Highway Exhibit in San Francisco

Plans are being formulated to hold the 1939 American Road Builders' Association Convention and Highway Exhibit in San Francisco during the early part of March, 1939 in the Civic Auditorium. The latest in road-building equipment, materials and methods will be displayed and dramatized for the show visitors.

MAIL THIS IF YOU WANT TO KNOW WHY THE MAJORITY OF FLEETS ARE GOVERNOR EQUIPPED

Attach this to your letterhead. Get the proof that Hoof Governors reduce accidents, cut oil and gas consumption, increase engine life and bring 16 other profitable advantages to users.

**BEFORE YOU
SIGN UP
FOR ANY
1939 CARS
OR TRUCKS**

Make sure you're going to get the
SAFEST, LOWEST COST FLEET OPERATION
by specifying
HOOF GOVERNORS
They're either STANDARD or OPTIONAL EQUIPMENT on all 1939 Truck Models! Key Type for utmost security. Also Seal and Dash Control Types.
HOOF PRODUCTS CO., 166 N. Franklin St., Chicago, Ill.

MAIL THIS IF YOU
THINK ALL GOVERNORS
ARE ALIKE!...

Only Hoof's exclusive Cantilever Spring Principle can assure you of freedom from sticking and maintenance expense. Attach this to letterhead for proof.

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
OCTOBER, 1938

5 Battery-saving rules for winter operation...

Form 219—J 3750—4-38—128M

DEPARTMENT CORRESPONDENCE

Subject: ENGINEERING FIELD SERVICE
WINTER BATTERY MAINTENANCE

To OPERATING Dept.

No. 1246

THE ELECTRIC STORAGE BATTERY CO.

Date: Sept. 20, 1938

Printed in U. S. A.

Confirming our decision at conference this morning, we believe it is a good idea at this time of the year to call the attention of our fleet customers to our recommendations for Winter battery maintenance. By taking a few simple steps now, an operator can safeguard his fleet against tie-ups and delays due to run-down batteries, and at the same time prolong battery life more than enough to pay for this seasonal attention. The following points will be stressed:—

1. Check specific gravity readings with hydrometers of every battery in service.
2. Recharge fully all those showing gravity below 1.225. (80° F.—Normal electrolyte level)
3. Check and adjust all regulators to Winter running conditions.
4. Make a general check to remove any causes for run-down batteries.
5. Adopt and maintain a practical battery maintenance schedule.

Please instruct your field engineers regarding these plans.

AUTOMOTIVE REPLACEMENT SALES



Exide

COMMERCIAL TYPE BATTERIES

With Mipor and Slotted Rubber

"Mipor," Reg. U. S. Pat. Off.

THE services of Exide's corps of engineers, located at 21 strategic points throughout the country, are available to all Exide users.

Why not take advantage of this service in your winter conditioning and maintenance program?

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto



To mark the fiftieth anniversary of Exide Batteries, a handsome souvenir booklet has been prepared illustrating the essential part these batteries play in daily life. Write, and we will gladly send you a free copy.

COMPARATIVE HEAT GENERATION

In Truck Tire Treads and Carcasses

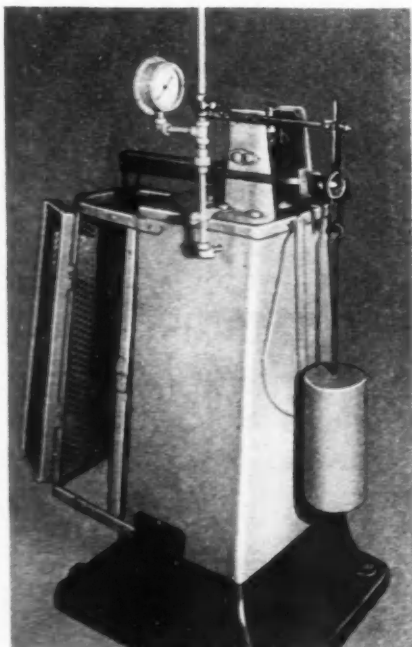
By A. H. Nellen

Director, Development Department,
Lee Tire & Rubber Company

This presentation is the second on the subject of "Weighing Truck Tire Quality." The first was published last month and dealt with the endurance qualities of pneumatic truck tires as determined by properly conducted indoor wheel tests.

The effect of heat on tire life is so well known to fleet operators that the author ignores it as a subject of discussion in this article. Instead he concerns himself exclusively with the results of comparative tests of heat generation in truck tire treads and carcasses.

As in the case of the first article, the truthfulness and accuracy of the test results require no further endorsement than that they are presented under the signature of the director of Lee's Development Department.



Flexometer used in making this test.

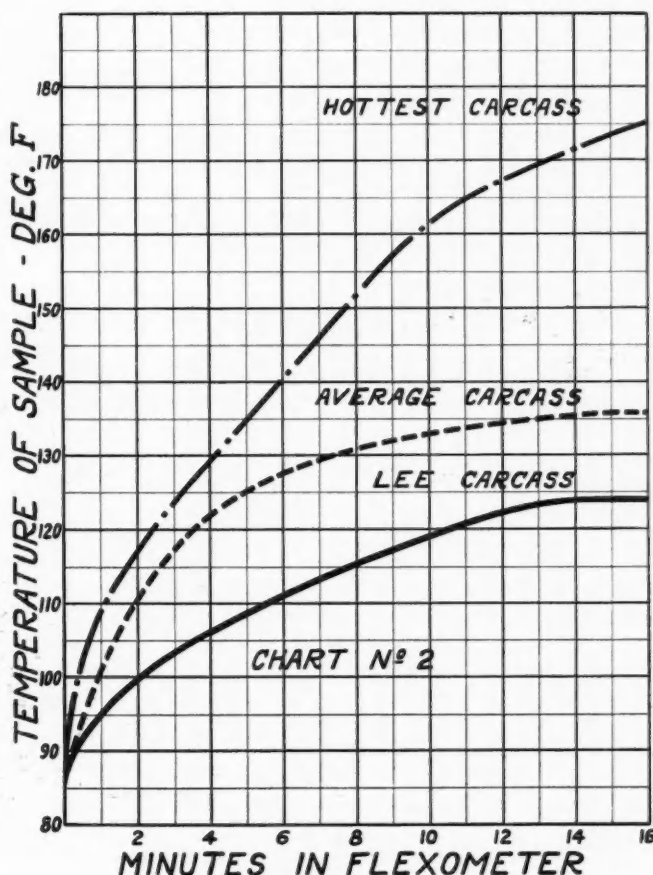
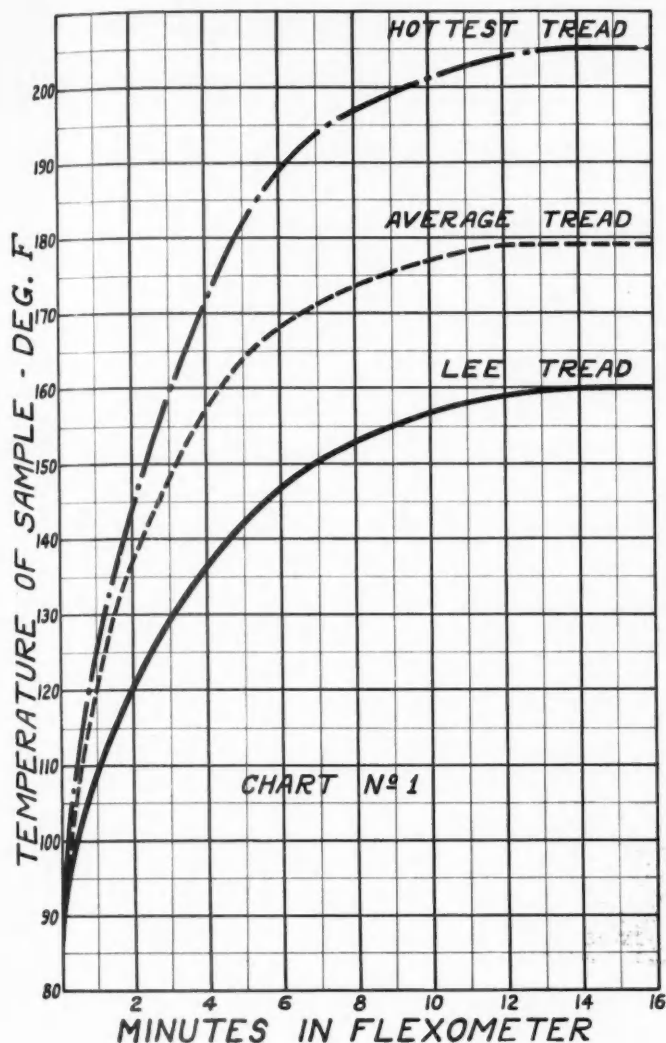
THE heat built up within a tire when running is the total accumulated heat generated within the tread, carcass, and cushion as they are compressed or flexed under load, *plus* that heat which is generated *within the cords themselves* as they bend and stretch under the flexing strains. A testing instrument which has been placed on the market recently enables us to subject the various individual parts of the tire to compressive strains, and to accurately measure temperature developed within these individual parts by these compressive strains. This instrument is called the Flexometer.

In a recently published article, "Weighing Truck Tire Quality," we enumerated six reasons why Lee truck tires outperform all others. In the second of these six reasons we stated, "THE COMPOUNDING OF LEE TREADS, CUSHION AND CARCASS STOCKS IS SUCH THAT A MINIMUM OF HEAT IS DEVELOPED IN THE TIRE." The purpose of the present article is

to prove the accuracy of this statement.

Small cylindrical samples of exactly the same dimensions were cut from the treads and from the carcasses of each of the fifteen 9.00-20 truck tires which were run on the test wheel, the tests of which were tabulated in the article "Weighing Truck Tire Quality," and these were placed in this machine and tested individually. The weight as shown in the illustration puts the cylindrical sample under a definite compression load while a high frequency vibration is impressed on the sample through the upper anvil. The temperature rise at the base of the sample is measured by a fine wire thermocouple and potentiometer and is tabulated at intervals of one minute.

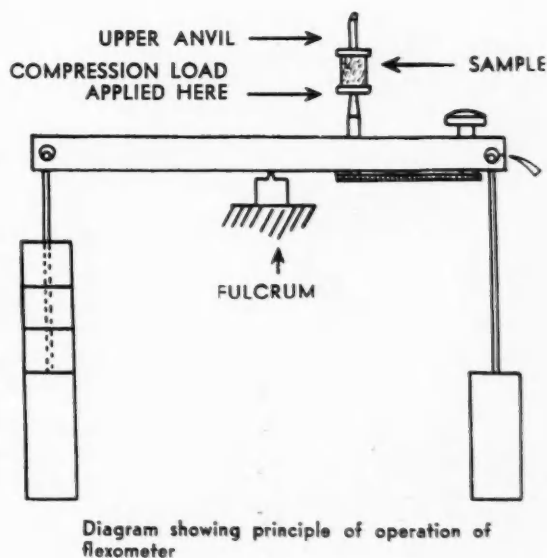
All of these samples were tested in exactly the same manner and the temperature rises on the tread stocks are shown on chart No. 1. Note the Lee tread temperature rise compared with the average of all the fourteen competitive treads, and also with



the hottest-running tread. Chart No. 2 shows similar temperature rise comparisons on the carcass samples.

These charts show the unusually cool-running qualities of the Lee tread stock and the Lee carcass, as compared with competitors' treads and carcasses. The effect of heat generation on truck tire performance is well known, and this test clearly demonstrates one more reason for the superior endurance qualities of the Lee Double-Life Cord truck tire to all other makes, as shown in the original endurance test tabulation.

Copies of this article and/or "Weighing Truck Tire Quality" and/or "Facts About LEE of Conshohocken Tires made with LEE Double-Life Cord, U. S. Pat. Re. 20316" will be gladly sent on request. Lee Tire & Rubber Company, General Office, Conshohocken, Pa.



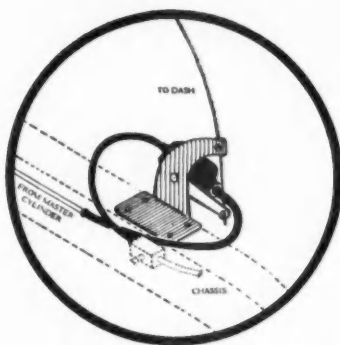
Copyright 1938, Lee Tire & Rubber Co.

NEW PRODUCTS

(CONTINUED)

Front Brake Control

The Brake Check Sales Co., 7345 Harvard Ave., Chicago, has a manually-operated device for cutting off the front brakes of a hydraulic system. It is a simple ball valve attached to the frame. Flexible brake tubing is cut into the fitting and the brake fluid is directed through the valve back into the brake line. A control wire to the dash tips the valve up,



dropping the ball into the seat and cutting the pressure to the front brakes.

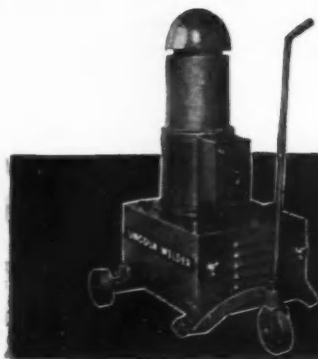


"TIME IS VALUABLE... OUR LINCOLN WELDER SPEEDS UP MANY JOBS"

Mr. Norde, shop foreman, Red Arrow Freight Lines, Inc., Houston, Texas, says their Lincoln Welder is "hot" most of the time, helping to keep their large, modern fleet of express trucks on the go safely and at minimum cost. He says that the repair jobs done with this welder include the following: cracked steel wheels, bumpers and supports, axle housings, chassis frame work, body work, transmission cases, brackets of all kinds, tool boxes, radiator shells, levers and pedals, as well as many miscellaneous machine shop repair and fabrication jobs.

"We consider our Lincoln Welder a very valuable piece of equipment because it enables us to repair many parts which would otherwise have to be replaced. This forestalls considerable delay and saves a lot of money."

It will pay you to investigate the Lincoln fleet repair shop welder. Being of D. C. motor generator type, it will weld and hard-face all metals. It is as easy to operate and as reliable as any of your shop tools such as drills or grinders. Consult the nearest Lincoln office or mail the coupon for details.



THE LINCOLN ELECTRIC CO.

Largest Manufacturers of Arc Welding Equipment in the World

MAIL THE COUPON TODAY

THE LINCOLN ELECTRIC CO.
Dept. AF-533, Cleveland, Ohio

Send a free copy of Bulletin 314 describing the Lincoln 150-amp. welder.

Name _____ Position _____

Company _____

Address _____

City _____ State _____

New OTC Pullers

New OTC pullers and puller attachments, made by the Owatonna Tool Co., Owatonna, Min., are adaptable to all makes of trucks and tractors for pulling gears, drive shafts, axles, camshafts, pinion shafts, transmission shafts, bearings, pinion races, etc. The combination can also be used to replace bearings where a press is not available.

AFTER HOURS

(CONTINUED FROM PAGE 19)

violation of or compliance with the law would not be dependent upon the thickness of a pencil point.

It is to be hoped that the I.C.C. will stay its order, effective Oct. 1, and grant the trucking industry a rehearing. Simple justice calls for such action because the operators have not had an opportunity to present their views on a specific legal hours of service limit. It will be difficult for many operators to believe that the I.C.C. means to "preserve and foster" highway transportation, if the petition is ignored.

It will perplex many more operators that railroad employees can work 16 hr. in 24 and more than 60 in a week when truck drivers are held to 10 and 60.

A Miracle

THE Transportation Conference called by the U. S. Chamber of Commerce last month turned out to be a sympathetic "let's-do-something-for-the-starving-railroads" confab. Representatives of competing forms of transportation were invited and were present. It was a railroad right-of-way so they stopped, looked and listened.

They listened to the railroads' woes and to suggestions for giving them relief. Miraculous was the fact that railroad spokesmen blamed current financial losses not on trucks, not on buses, but on business conditions. Not a harsh word was uttered against trucks.

And yet was this a miracle? Hasn't it been true in the past that when railroad executives got together in conference with truck interests they pretended a fair attitude which immediately thereafter was contradicted by the behavior of their publicity departments? They have proved that they are not to be trusted.

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
OCTOBER, 1938

TAKEN TO THE CLEANERS ... BY THEIR OWN TRUCKS!

JUST PUT YOURSELF in the shoes of the manager of this Midwestern dry-cleaning firm.

His fleet . . . perhaps like yours . . . was gobbling up oil by the gallon. And he didn't know what to do about it.

But one day a Gulf man persuaded him to take an extraordinary step . . . to increase his oil *cost-per-gallon* in order to bring down his oil *cost-per-mile*! To switch to Gulfpride—the finest oil money can buy.

And . . . in spite of Gulfpride's premium price, operating costs took a nose dive!

Gulfpride Saves Almost One Dollar In Four!

Yes, sir . . . over a six-month period, the oil bills for that fleet dropped 23.5%. They got better lubrication for *less money*!

Surprising? Yes—but Gulfpride does mighty surprising things in cutting oil and repair bills. That's why so many bus and truck operators are specifying "Gulfpride only" for their fleets.

Because Gulfpride is refined by Gulf's exclusive Alchlor process as well as by conventional methods. This unique, Gulf-patented refining process digs so deep into the 100% Pennsylvania that it gets out as much as 20% more waste and sludge.

Don't waste any more of your money on "cheaper" oils. Get better lubrication at a lower annual cost. Fill up your fleet with Gulfpride—*today*!

Gulf Oil Corporation, Gulf Refining Company,
Pittsburgh, Pennsylvania.

Gulfpride 
The world's finest motor oil

100% PURE PENNSYLVANIA . . . IN SEALED CANS ONLY



NEWS

SUMMARY

Truck Production Still Off

Truck production in the United States and Canada during July totaled 38,330 units, a drop of eight per cent from the June figure of 41,854 and 54 per cent below the July, 1937 total of 83,996. For the first seven months of 1938 the total was 331,743

units compared with 617,055 in the same period a year ago.

New truck registrations by month and make will be found on page 35 of this issue.

UPS in Philadelphia and Milwaukee

United Parcel Service has recently taken over delivery service for John Wanamaker, Strawbridge & Clothier, Gimbel Brothers, Inc., and N. Snellenburg & Co., Inc., in Philadelphia and the Milwaukee Boston Store, Gimbel Brothers, Inc., and Ed. Schuster & Co., Inc., in Milwaukee. U.P.S. headquarters is at 331 E. 38th St., New York.

J. W. Meriam, for 24 years vice-president and secretary of the Lincoln Electric Co., has resigned recently



Truck Show to Honor Presidents

Presidents of approximately 75 of the leading manufacturers of commercial vehicles and maintenance and operating equipment will be the honored guests when the Fifth Annual National Motor Truck Show holds its yearly banquet for the industry, on Nov. 15, at the Hotel Astor, New York.

Truck Show dates this year coincide with the National Automobile Show, Nov. 11 to 17 inclusive. The place, Commerce Hall, Port of Authority Building, 15th St. and 8th Ave., New York.

Since the list of exhibitors at the truck show was published last month the following names have been added:

Almetal Universal Joints Co., Baker-Raulang Co., Butler Mfg. Co., Cummins Engine Co., Detroit Compensating Axle Co., Fitz Gibbon & Crisp, Inc., Hegeman-MacCormack Corp., Motor Wheel Corp., North American Sportsmens League, Pak-Age-Car Co., Scully Signal Co., Sterling Motor Truck Co.

Pedrick Free Ring Offer

A sensational deal on Pedrick piston rings is being offered to fleetmen who operate their own shops during October and November only. Essential facts of the plan are that one set of rings is offered free with every two sets purchased, provided the free set is not valued at more than half the combined price of the two paid-for sets. Fleet discounts are not affected. For complete details write the Wilkening Mfg. Co., 2000 S. 71st St., Philadelphia.

An offer of free sets of Pedrick rings is also being made to car owners generally in advertisements appearing in the *Saturday Evening Post*, *Collier's* and the *Country Gentleman*. Car owners must make free offer arrangements with independent repair shops or dealer service stations.

Invitations to Automobile Show

Invitations to visit the National Automobile Show in Grand Central Palace, New York, Nov. 11 to 18, will be sent to more than 6,000 fleet operators within a radius of 200 miles of New York.

The show will be open on Sunday, from noon to 11 p. m. The hours for other days will be 10:30 a. m. to 11 p. m., except Armistice Day when the doors will open at two o'clock.

Exhibitors of commercial vehicles to date are: American Bantam Car Co., Chevrolet Motor Division G. M. Sales Corp., Dodge Brothers Corp., Federal Motor Truck Co., Hudson Motor Car Co., Mack Trucks, Inc., Plymouth Motor Corp., Studebaker Corp., and Willys-Overland Motors, Inc.

WEAVER AIR COMPRESSORS

SPECIALLY DESIGNED FOR AUTOMOTIVE USE

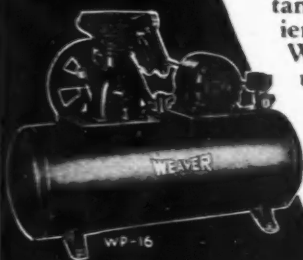
Sixteen models ranging from ½ to 10 horsepower offer a choice that is sure to provide exactly what you need. Weaver Compressors are quiet, durable, efficient . . . backed by the dependable Weaver guarantee.

New Low Priced Units

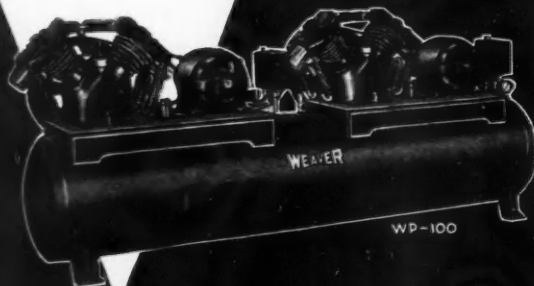
Three new models 1½ and 2 h. p. compete in the low price field. All have twin cylinder construction and characteristic Weaver economy.

Dual Compressor Outfits in 6, 8 and 10 h. p.

Two independently controlled compressors on a single tank, for economy and efficiency. Ask your nearest Weaver jobber or write us for details on complete line of Weaver Air Compressors.



Catalog on request



WEAVER

WEAVER MANUFACTURING COMPANY

Springfield, Illinois

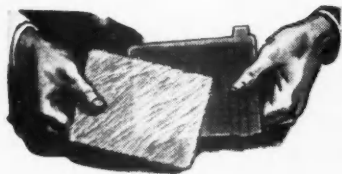
CUT BATTERY COSTS

WITH A BATTERY THAT IS BUILT FOR TRUCK SERVICE
NOT A PASSENGER CAR TYPE ADAPTED FOR TRUCK USE

● Here's the way hundreds of "heads-up" operators are solving their battery problems and pocketing replacement savings. They're equipping with the Goodrich Kathanode Truck Battery—the truck battery that's specially designed to deliver *more* service—*more* power than the toughest truck haul will ever require—because it's the same patented construction used for years in batteries for battleships . . . submarines . . . airplanes and crack trains where steady, efficient performance is an absolute "must."

● The Goodrich Kathanode Truck Battery with its *heavier, thicker* plates will deliver dependable power for brighter lights, quick, sure starts, day and night—all-year-round. And don't forget, this special truck-type battery carries a guarantee that is *more than double* the guarantee placed behind conventional type truck batteries, yet it costs you not a penny more.

HOW SPUN GLASS GIVES THIS BATTERY EXTRA LONG LIFE



● Fine, spun glass threads, woven into flexible, porous mats are placed on *both sides* of the positive plates. They keep the active power-producing material from shedding prematurely. Thus the battery lasts much longer — cuts the cost of operating your trucks.



THIS BATTERY IS SO RUGGED — SO POWERFUL IT IS GUARANTEED MORE THAN TWICE AS LONG AS CONVENTIONAL BATTERIES, YET IT COSTS NOT A PENNY MORE

● Imagine! When you equip your trucks with Goodrich Kathanode Truck Batteries, you're getting a guarantee that's actually *double* the guarantee placed behind conventional type truck batteries—or passenger car batteries in truck service. MORE POWER to you. MORE PROFITS to you. See your Goodrich Dealer or Goodrich Silvertown Store. Or write Battery Sales Department, The B. F. Goodrich Company, Akron, Ohio, for further details.



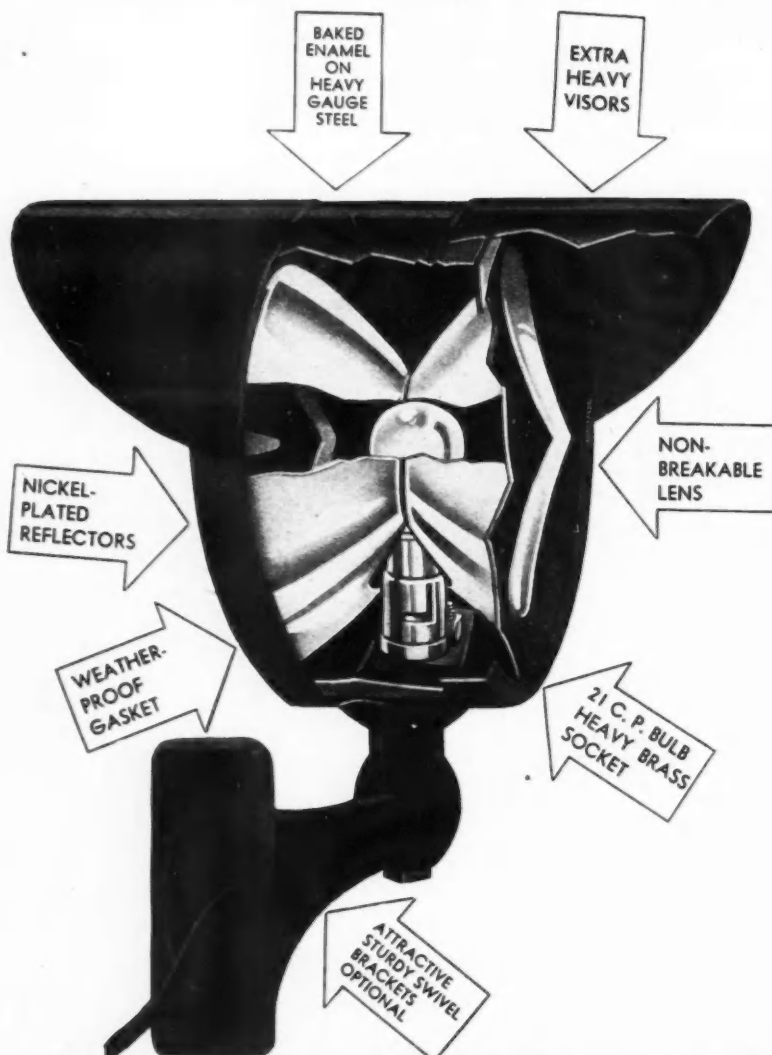
Goodrich KATHANODE Truck Battery

BUILT TO DO A TRUCKING JOB!



Herewith a progress report of the activities of the SAE Truck Rating Committee. The executive sub-committee is shown above in conference aboard the "Sally Duck," Committee Chairman F. K. Glynn's 35-ft. ACF cruiser. Left to right are Committeemen Buckendale, Lautzenhizer, Bachman, Blanchard (secretary) and Glynn. At left the "Sally Duck" rides at anchor off Douglaston, L.I. Not a bad committee room, eh?

ARROW invites you
to look inside before you BUY



COMMERCIAL OPERATORS EVERYWHERE KNOW AND PREFER ARROW PRODUCTS. MARKER LIGHTS ... FLARES ... SIDE-VIEW MIRRORS ... REFLEX REFLECTORS ... FOG LIGHTS ... SIGNALS

*For Safety
Sake*

**ARROW SAFETY
DEVICE COMPANY, INC.**

MEDFORD, NEW JERSEY

Show Photo Contest Closes Oct. 15

Because there have been scores of last-minute entries from many parts of the country accompanied requests for an extension of time, the closing date of the \$2,300 "Candid Picture of Transportation" photo contest, sponsored by the Fifth Annual National Motor Truck Show, has been made Oct. 15.

Camera fans wishing to enter the contest are requested to write the contest editor, National Motor Truck Show, Hotel Pennsylvania, New York, N. Y.

Private Truckers Name Directors

The recently organized National Council of Private Motor Truck Owners has elected the following men to serve on its board of directors:

R. A. Cooke, American Newspaper Publishers Assn; E. L. Hart, Atlanta Freight Bureau; F. B. Townsend, Minneapolis Traffic Association, and Robert F. Wilson, Associated Grocery Manufacturers of America.

For a brief on the work which the Council is undertaking to clarify the meaning of the term "Private Carrier," please turn to page 84 of this issue.

APPOINTMENTS

Clinton Brettell, well-known automotive engineer, has become associated with the E. R. Merrill Spring Co., New York, where he will augment both engineering and sales staffs.

Sid G. Harris has been named eastern representative for Faber Laboratories, Inc., Chicago, and will make his headquarters at the company's New York office. Mr. Harris comes from the Macmillan Petroleum Corp., where he was district manager.

Gar Wood Industries has announced the promotion of Ralph J. Reich from assistant manager to manager at the Buffalo branch of its hoist and body division.

The appointment of Chas. A. Marien, Jr., as manager of both Southeastern and Southern districts was announced by Mr. J. A. Ramsey, president of the Ramsey Accessories Mfg. Corp., St. Louis, Mo. Mr. Marien has headed the Southeastern district for several years.

Earl Aiken, for the past four years publicity director for the United States Advertising Corp. in Toledo, has joined the advertising and publicity staffs of the Libbey-Owens-Ford Glass Co., also of Toledo.

COMMERCIAL CAR JOURNAL
OCTOBER, 1936

When writing to advertisers please mention Commercial Car Journal

Line Number	MAKE AND MODEL	GENERAL (See Keynote)				ENGINE DETAILS				TRANSMISSION		REAR AXLE		FRONT AXLE	BRAKES			FRAME														
		Tonnage Rating	Chassis Price	Standard Wheelbase	Max. Wt. B.	Gross Vehicle Weight with Chassis	Chassis Wt.	(Stripped)	Front and Rear	Dual rear 5-single rear	No. of Cylinders	Stroke	Displacement	Comp. Ratio	Max. Brake H.P. at R.P.M.	Number, Diameter and Length	Governor Standard	Make and Model	Forward Spd's	Make and Model	Clear and Type	Drive & Torque	Gear Ratio in High	Make and Model	Location	Area	Drum	Material	Hand Location	C-A Dimension (Std. W. B.)	Side Rail Dimensions	Type
1	Autocar	(A) A	1250	139	179	13500	4790	6.50/20D	8.25/20	Her JXB	6-4	4.4	263	8.197	78-2300	7-2.1x10.10	Y	Cla 185F	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	306	470	c	TD	82 1/2	8 1/2 x 3 1/2	L
2	(N) RM	(N) RM	1625	139	179	16000	5150	6.50/20D	8.25/20	Own 315	6-4	4.4	315	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	358	578	c	TD	84	8 1/2 x 3 1/2	L
3	(N) RL	(N) RL	2250	164	212	18500	6715	6.50/20D	9.00/20	Own 358	6-4	4.4	358	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
4	(N) RL	(N) RL	2895	164	212	23000	7905	6.50/20D	9.00/20	Own 358	6-4	4.4	358	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
5	(N) RL	(N) RL	3600	164	212	25000	7905	6.50/20D	9.00/20	Own 358	6-4	4.4	358	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
6	(N) DF	(N) DF	4200	164	182	26500	7655	6.50/20D	9.75/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
7	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
8	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
9	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
10	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
11	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
12	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
13	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
14	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
15	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
16	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
17	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
18	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
19	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
20	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
21	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
22	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
23	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
24	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
25	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
26	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
27	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
28	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
29	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
30	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
31	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
32	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
33	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
34	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
35	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
36	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
37	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
38	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
39	(N) NPS	(N) NPS	4200	164	182	26500	7655	6.50/20D	10.50/20	Own 404	6-4	4.4	404	8.197	78-2300	7-2.1x10.10	Y	Own RL5	4	Tim 3100T	SE	H	6.49-7.58	Tim 3100T	LAHV	466	694	c	TD	84	8 1/2 x 3 1/2	L
40	(N) NPS	(N) NPS	42																													

Model	Price	Options	Engine	Transmission	Drivetrain	Weight	Capacity	Notes
121	121.00
122	122.00
123	123.00
124	124.00
125	125.00
126	126.00
127	127.00
128	128.00
129	129.00
130	130.00
131	131.00
132	132.00
133	133.00
134	134.00
135	135.00
136	136.00
137	137.00
138	138.00
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141	141.00
142	142.00
143	143.00
144	144.00
145	145.00
146	146.00
147	147.00
148	148.00
149	149.00
150	150.00
151	151.00
152	152.00
153	153.00
154	154.00
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165	165.00
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167	167.00
168	168.00
169	169.00
170	170.00
171	171.00
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186	186.00
187	187.00
188	188.00
189	189.00
190	190.00
191	191.00
192	192.00
193	193.00
194	194.00
195	195.00
196	196.00
197	197.00
198	198.00
199	199.00
200	200.00

Price Includes Chassis & Cab. (E) For export only. * Denotes New Models or Change in Specifications.

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[illegible]

Line Number	MAKE AND MODEL	GENERAL (See Keynote)				TIRE SIZES		ENGINE DETAILS				TRANSMISSION		REAR AXLE		FRONT AXLE	BRAKES				FRAME													
		Tonnage Rating	Chassis Price	Standard Wheelbase	Gross Vehicle Weight with Max. Tires	(Curb Wt.)	Standard Front and Rear	Dual rear S-single rear	Maximum Tire Size	Furnished	Model	No. of Cylinders	Displacement	Comp. Ratio	Torque lb. ft.		Max. Brake H.P. at R.P.M.	Main Bearings and Diameter	Governor Standard	Make and Model		Forward Spd's	Clearance and Type	Gear Ratio	Range in High	Make and Model	Location	Type	Make	Location	Type	C-A Dimensions (Std. W. B.)	Side Rail Dimensions	Type
1	Mack (Cont'd) FH	8000	160	172	13200	10,500/24D	12,000/24	12,000/24	12,000/24	12,000/24	Owa CF	6-34x54	468	5.0	810	118-2400	7-32x12	X	Owa BX	CD	7-48-12.4	Owa BQ	401A	781	1194	W	781	1194	W	91	1013x34	L		
2	AC	7600	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
3	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
4	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
5	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
6	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
7	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
8	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
9	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
10	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
11	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
12	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
13	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
14	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
15	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
16	AC	6100	194	220	12500	10,500/24D	11,250/24	11,250/24	11,250/24	11,250/24	Owa BQ	6-34x54	611	4.8	880	125-2500	7-32x12	X	Owa AC	2F	7-43-10.0	Owa BQ	401A	781	1194	W	781	1194	W	102	1013x34	L		
17	Plymouth (*) PT57	5600	116	116	4000	1850/6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	6-34x44	201	6.7	145	70-3000	4-24x10H	N	Owa	HV 1/2	H 3.73-4.78	Owa CJ	401H	148	251	C	37H	63x14	C	37H	63x14	C		
18	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
19	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
20	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
21	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
22	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
23	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
24	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
25	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
26	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
27	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
28	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
29	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
30	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
31	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/16S	6.00/16S	Owa	4-34x44	140	5.4	98	42-2500	3-24x10H	N	Owa	3F	4.55-4.80	Owa	401H	188	242	C	37H	63x14	C	37H	63x14	C		
32	Reo (S)	579	114	120	1973	6.00/16S	6.00/16S	6.00/16S	6.00/6																									

[illegible]

Six-Wheelers

Autocar (1)
(a) 6x2 RL
(a) 6x2 RL

(a) 6x2	1F	..
(a) 6x2	NF	..
(a) 6x2	T	..

	6x4 DF	4R
	6x4 TO	4R

6x4 TD	4R	...
6x4 TC	4R	...
(a) 6x2 TD	2F	...

(a) 6x2	UN	2F
(a) 6x2	UN	2F
(a) 6x2	UN	2F

(a)	6x2	UT	2F
	6x4	UTO	4R
	6x4	UTD	4R

054 Q1D 4K : : : : :
tro'kway180XSBT 5-7

180XSBT Spec. 5-7

Product	35S B2	2F	9-8
.	40S B2	2F	8-10
.	18S B4	4R	2 1/2-4

18SB2	2F	2F	4
25SB2	2F	2F	4-6

...	25SB4	4R 4-6
...	35SB4	4R 6-8
...	40SB4	4R 8-10

12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812

1

LINCOLN NAMES AWARD WINNERS

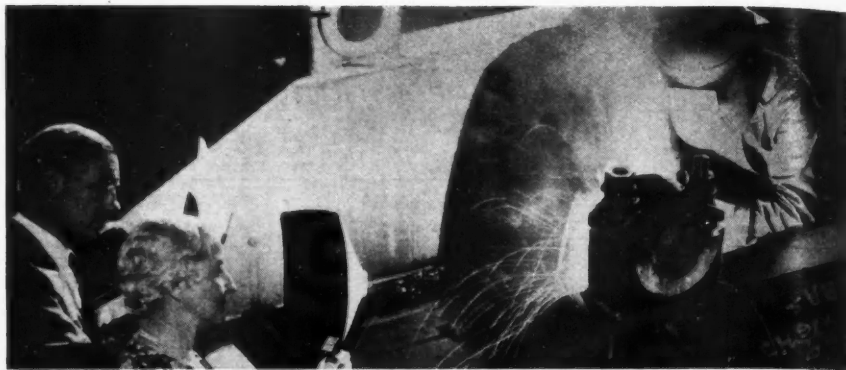
The Jury of Award of the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, after judging thousands of papers submitted in the \$200,000 Award Program, found that savings to industry by arc welding claimed by authors of papers aggregates \$1,600,000,000. This figure is arrived at after discounting some very enthusiastic claims.

Altogether, 382 awards were made by the Foundation. The amounts ranged from \$101.75 for honorable mention to \$13,941.33, the Grand Award.

In the automotive division, a school bus body, a truck body, a track roller frame and side-dump trailer were the subjects of papers for which three design engineers and a quarry superintendent received first, second, third and fourth awards respectively.

H. C. Wendt, chief engineer, Hackney Bros. Body Co., Wilson, N. C., received first award of \$3,764.94 for his paper "Welded School Bus Body."

Second automotive award of \$2,543.88 went to Fred S. Beach, Sr., designing engineer, Northwestern Electric Co., Portland, Ore. His paper, "Welded Steel Truck Body," shows that power companies could save \$6,000,000 a year by operation of a maintenance truck of welded design.



Top: Mr. & Mrs. A. E. Gibson, the Wellman Engineering Co., win grand award. Above: Automotive winners, l. to r., H. C. Wendt, Hackney Bros. Body Co., Fred S. Beach, Northwestern Electric Co., and C. A. Davis, Jr., Caterpillar Tractor Co.

C. A. Davis, Jr., engineer, Caterpillar Tractor Co., East Peoria, Ill., received the third award of \$1,729.84 for his paper, "Welded Track Roller Frame," showing a saving of \$250,000 by use of arc welding.

Fourth award of \$1,526.33 went to Nelson Severinghaus, superintendent, Consoli-

dated Quarries Corp., Lithonia, Ga., for his paper "Side-Dump Semi-Trailer." The study demonstrates a saving of \$1,300,000 available annually to the quarry industry by operating a dump truck of specialized design.

Of the other awards in the Automotive

THOUSANDS OF

"Grey-Rock IS THE FASTEST GROWING LINE" *because*



Grey-Rock

classification, \$508.77 went to Earle S. Lee, welding foreman, Buda Co., Harvey, Ill.; Herman Frentzel, chief engineer, The Heil Co., Milwaukee, Wis., and to Arnold Meyer, mechanical engineer, The Heil Co.; \$305.26 to Hamilton Johnson, president Uni-Cond Engines, Inc., Baton Rouge, La.; Harry Wunsch, mechanical engineer, Silent Hoist Winch & Crane Co., Brooklyn, N. Y.; Dale D. Douglass, plant engineer, Chevrolet Gear & Axle Division, General Motors Corp., Detroit; Carl L. Halpin, factory superintendent, Fruehauf Trailer Co., Detroit; \$203.51 to Frank Adams, engineer, Fairbanks-Morse Co., Beloit, Wis.; R. S. Rose, chief engineer, Wentworth & Irwin, Inc., Portland, Ore.; Harry H. Hooker, assistant to chief engineer, Eaton Mfg. Co., Cleveland; Ray F. Kuns, president, Trotwood Trailers, Inc., Trotwood, Ohio; \$152.63 to Carl Wm. Floss, Detroit; Ray Harroun, development engineer, Saginaw Stamp & Tool Co., Saginaw, Mich.; L. J. Kline, vice-president and general manager, Mercury Mfg. Co., Chicago; Everett G. Smith, welding instructor, Louisiana State University, University, La.

Honorable mention awards of \$101.75 for automotive papers were received by: Arthur Brown, The Heil Co., Milwaukee; Harold Bickford, Lombard Traction Engine Co., Waterville, Me.; David G. Hall, San Diego, Calif.; Carl Braatz, superintendent, Hammerblow Tool Co., Wausau, Wis., and H. S. Berkey, Placentia, Calif.

The Grand Award of the Foundation's Program went to Mr. and Mrs. A. E. Gibson, president and stockholder respective-



Managers of 16 field regions of the Dodge division of Chrysler Corp. joined 32 important Dodge dealers at Detroit's Hotel Statler recently to discuss with factory representatives the company's 1939 merchandising and sales set-up

ly of The Wellman Engineering Co., Cleveland, Ohio. The authors jointly received \$13,941.33. Their paper is an outstanding treatise on all the elements required to assure the business and technical success of all users of welding throughout the industry.

The Foundation's Award Program, which began 18 months ago, was judged by 31 engineering authorities from leading universities and colleges throughout the country, and has been hailed by leaders in science, education and industry as a valuable contribution to industrial progress in America.

Federal's August Sales Increase

Federal Motor Truck Co., Detroit, reports domestic orders for August 52.7 per cent ahead of July and 25.7 per cent over sales in August a year ago. "This increase is indicative of good business for this Fall," said K. M. Schaefer, general sales manager.

Air-Maze in New Quarters

The Air-Maze Corp. has recently moved into new quarters at 5200 Harvard Ave., Cleveland, Ohio, where a modern factory and office building give the company better facilities in every department.

SHOPS NOW SAY:

"You don't just sell brake blocks—you give us a complete brake-balancing system."

"With your Guide we can easily balance every brake in the fleet from just two types of block."

"You've simplified brake service, improved brake blocks, and made truck- and trailer-braking a science."

"Your intelligent instructions show us how to compensate for unusual traffic conditions, heavy grades and overloads."

"We recognize your corporation's products on 9 out of 10 vehicles."

"You increase our brake mileage, reduce our service costs, and improve our safety records."

BALANCED BRAKE BLOCKS

UNITED STATES ASBESTOS DIVISION of Raybestos-Manhattan, Inc., MANHEIM, PA.

BRAKE LININGS • CLUTCH FACINGS • FAN BELTS • HOSE • PACKINGS • RELINING EQUIPMENT



FOG LAMPS

*Save you from
Error and Terror*



MODEL NO. 855
America's Most
Beautiful and
Efficient Fog
Lamp

**For FOG, DUST,
SLEET, SNOW,
RAIN**

and for fair weather, too

SCIENTIFICALLY developed to penetrate and overcome the driving handicaps of adverse weather . . . and efficient auxiliary lamps in fair weather.

Magnificent lamps of unsurpassed dependability . . .

QUALITY BUILT. Dependable . . . sturdy . . . handsome!

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—you need it!**

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Whatever your requirements, if your problem is to transmit power at an angle, our field and factory experience of more than 30 years is at your command. Our Engineering Department will gladly submit quotations covering your requirements.

**BLOOD BROTHERS
MACHINE COMPANY**

DIVISION OF STANDARD STEEL SPRING COMPANY

ALLEGAN • MICHIGAN

A TRUCK SPINNER SPINS A GRIPE

(CONTINUED FROM PAGE 30)

a lot of drivers. You're cashing in on the fact that they're serious-minded men who know their job and are proud of doing it well, despite railroad politics and gravy-pawed politicians. Why not take the traffic light out of the neon sign weeds?

3. CARS ALONG HIGHWAYS WITHOUT LIGHTS. Drive out in the country any night or in the edge of any small town and you'll see from one to five cars along the road without a light showing. It's probably all right because its a passenger car but trucks use flares and fuses, or keep their running lights burning. The drivers are a lot keener about having a "Christmas Tree" than the cops are. Yea! Sure I know you've got laws about it.

4. PASSENGER CARS ON TRUCK ROUTES as a kick probably sounds screwball to you. But does it? Nearly every "City" (even so called by courtesy) has a truck route through it. Any driver caught off it better have six letters from his Democratic Committeeman back home. But do the trucks really have a route? Hell No! Ride any of 'em at night and you find cars driving through between rigs, cutting in and out, and getting sore because they're caught in a line of trucks. Keep passenger cars off truck routes. Hand them the same dose of grief at the Station House for being there as you'd hand a truck playing up around the Mayor's house. Five per cent of

the cars on a truck route *may* have a legitimate reason, but as sure as shippers kick, about 95 per cent haven't.

5. MINIMUM SPEED LAWS. If you have a maximum speed on a given highway of 35 miles per hr. then put a minimum speed on of 25 miles per hr. for the same stretch, and pass out tickets just as quick for driving too slow as too fast. It's just as dangerous.

"But many cars are old," you say, "and the drivers don't want to drive fast." Well, if you want the real reason, Jim, it's that most of these old jallopies are local votes. But a dead vote is a lost vote anyway you figure it. Most of the grief in traffic is caused by "the passes that failed." You are riding along rollin' sweet and pretty inside the law when you catch up to a string of cars creeping. About that time they start cutting out and passing each other and by the time you get to the head of the line you find some old haywire droplever dishpan rattling along. Suppose it is Uncle Eben in from the sticks. He's a real danger on the highway.

You figure out what to do with 'em in an idle moment before lunch some day.

6. DIFFERENT SPEEDS FOR TRUCKS AND CARS is another relic from the long ago. It came out of the "stone crusher age" and still hangs on. The general idea is that a "Big heavy truck is hard to stop." Come on, Jim, lift your chin off your shirt and wake up. Trucks can and do stop as fast as cars, and most of them can stop quicker. If you hold all traffic to one speed you move it faster and with less confusion. The trouble with a lot of otherwise smart birds is that mentally they're still running

around with a gee string and a stone tomahawk.

7. **CROWDING AND CUTTING IN** gets its full share of cussin' from the good highball crews. Any vacuum brain who thinks he's going to teach a driver where he belongs by swerving in as he passes is still wearing three-cornered pants, and they ought to be taken down and the section of hide under the tail-gate warmed with a spring leaf. But if you drive a truck fifty miles without having to take your foot off the gas at least once to keep some hot shot from hooking your fender as he cuts in you'll have to be in some remote part of the Painted Desert.

Experience and plenty of grief has taught a truck driver that to keep his job he can't wear his spurs in the cab. If you'd figure some way to take the spurs off of a lot of the so-called "pleasure" car drivers you'd reduce your accident record about 95 per cent.

8. If you want to do something along this line you could go to the operating heads of several of the reputable trucking companies in your State and ask them to help you by picking out selected drivers on their runs to make reports on reckless driving they see. Don't make cops out of them, no driver wants to be one.

You'd soon find that drivers who didn't know each other, or were on different lines would be turning in numbers that were constant "repeaters." These are your trouble makers. Then watch these cars. If they are involved in a highway accident—throw the book at them.

* * * * *

If you really want to promote safety for the entire "motoring public" (I like that phrase, "motoring public" because it takes in all the clucks that ought to be running wheel chairs along with the real drivers) how about bearing down on a few of these things?

There's a lot of chin slingin' about the "sacredness of human life" being passed out. There's a lot of money being spent to save life. But does it occur to anyone to just use a little common sense and do something that doesn't take a million-buck appropriation from Congress?

You're going to say after reading this that I ought to have inspected my king-pin lock before I drove out from under my load. Sure, so what? I know I'm off the deep end because it doesn't require any new commissions or bureaus and there aren't any new jobs in it—and it's pretty simple at that.

Well, Jim, let me know what you think about it. If you could work up a little payoff for your "boys" you'd probably have a good chance to do something about it.

Your brother,

PAT.

EDITOR'S NOTE: The author of the above signs himself Eldridge Andrews. He admits being a partner in a Florida orange grove business with 13,000 trees. Last winter he drove a truck and ran up a mileage of 30,000. His complaints are based on experience.

Willys-Overland 3rd Quarter Report

In a statement covering the third quarter of the current fiscal year, Willys-Overland Motors, Inc., showed a continuing strong financial position. Current assets, on June 30, totalled \$3,314,534 with current liabilities amounting to \$420,189, giving a ratio of assets over liabilities of 7.89 to one. This compares with a ratio of 2 1/3 to one at the close of the first fiscal year on Sept. 30, 1937 and a ratio of 3.3 to one at the close of the second quarter on March 31.

Net loss, for the nine months ending June 30, was \$693,841.

CLAW TRUCK CHAINS

*can
take it!*

**20% more CLAW alloy steel
biting at the point of traction
GIVES LONGER, SAFER MILEAGE**

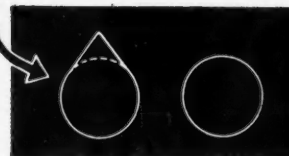
Yes, CLAW chains can take the terrific punishment of truck transportation because they are truck chains right down to the alloy that goes into every last link.



No chain made can equal the holding power of the exclusive CLAW cross links —links with a protruding wedge of CLAW-alloy steel (toughest metal known to chaindom) that actually CLAWS into the roadway for a determined grip. (See diagram to the left.) This wedge, giving 20% more steel to each cross chain, is kept constantly sharp by the honing effect of the pavement.

CLAWS are quick on and sure on, thanks to the improved Blue Boy Fastener. Special Indented Rim Chains eliminate play and prevent excessive breakage between cross chains and rim chains.

Keep your schedules on time in all kinds of weather and keep your chain costs down: Specify CLAWS all around.



COLUMBUS-McKINNON CHAIN CORP.

General Offices: TONAWANDA, N. Y.

Plants at St. Catharines, Ont. Can. and Vereeniging, So. Africa

**CLAW[★] TRUCK
CHAINS**

IS IT TIME TO BUY?

(CONTINUED FROM PAGE 27)

3. Repair costs will start at same point as when old trucks were new, and ascend at same rate.

Of course when the combined component reaches a low point the trucks should be replaced. Also when by replacement with a new vehicle the estimated combined component for this vehicle drops below the com-

bined component of the old truck within the estimated life of the new truck such a replacement should be effected at once. Looking at the specimen graph shown, the following results are indicated for that particular make of truck:

The combined component of the vehicles now in service indicates that the low point was reached about Dec. 31, 1937, and the replacement of these vehicles should have been made then. For example: At this date the cost is: gasoline—3.5 cents per mile,

repairs—6.8 cents per mile, and investment—4.0 cents per mile. Total 14.3 cents per mile for a distance of 1,233,750 miles that the fleet has traveled. If the old fleet is kept in service the cost at 1,750,000 miles, or three and one-half years more of operation, would be: gasoline—3.5 cents per mile, repairs—8.1 cents per mile, investment—3.2 cents per mile. Total 14.8 cents per mile, or an excess of 0.5 cents per mile. If a replacement is made the cost at that point would be: gasoline—3.2 cents per mile, repairs—6.0 cents per mile, investments—5.6 cents per mile. Total 14.8 cents per mile, the same as the old fleet. Beyond this point the old trucks will show a further increase and new equipment will show a decrease.

Another group of 10 trucks shows a combined component of the present vehicles will not reach a low point for about 500,000 miles more or 50,000 miles per vehicle, but the trend of the rate of reduction in cost is so slow that the saving in gasoline cost by the replacement with new equipment off-sets it. This is indicated by the estimated combined component for new equipment which falls below the indicated trend for the combined component for the old equipment. Therefore this equipment should be replaced at once because of the saving that may be effected.

In replacing the trucks shown in the chart the accompanying table gives the amount that our present annual book cost per ton, as contrasted to the cost per mile, would be affected by setting up a depreciation period of five years.

Annual Cost Per Ton

	Actual Cost			Est. 1938	
	1935	1936	1937	Old	New
*Items, 1, 3, 4, 6 and 9	.237	.227	.257	.23	.23
Items 7 and 8—Repairs	.231	.370	.218	.25	.16
Item 10—Gas and Oil	.123	.131	.127	.13	.09
Item 1—Capital Expend.24
	.591	.728	.602	.61	.71

*Drivers' and helpers' wages excluded.

This table indicates that the retail delivery cost would increase the first year about 10 cents per ton and would increase, due to increase in the cost of maintenance, up to 13½ cents per ton in 1942, the end of the depreciation period. The wholesale cost would probably not be affected the first year, but would increase up to the end of the depreciation period. These costs are of course based upon our past performance as to the ton-



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KEY-LOCKING HANDLE
for Heavier Doors**

A recent worthy addition to Eberhard's outstanding line of truck body hardware is the No. 565642 Key-Locking Handle. Simple and sturdy in construction with beautiful lines and attractive finishes, the new handle can be used with the Eberhard No. 5631 lock, as shown, or others of proper size. A feature is the built-in Corbin lock with 5-pin tumbler and ¾-in bolt. The new handle projects only 2 5/16 in. from the door, with ample finger clearance, and fits right or left hand doors. Shank is ¾ in. square and 4½ in. long. Length of handle is 7 in., with 4-in. grip. Crimped steel cutcheon of ½-in. stamped steel permanently attached. Chromium or cadmium finish.

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CLEVELAND, OHIO

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COMMERCIAL CAR JOURNAL
OCTOBER, 1938

nage hauled. As was explained earlier in this report, an increase in the tonnage hauled will result from the use of new equipment, which will materially reduce these anticipated increase costs.

WISE CRACKS ON CRACKS

(CONTINUED FROM PAGE 23)

In some types of engines the cooling system is so designed that non-circulation or "dead spots" are created, and these generate pockets of steam, which seriously impair the cooling efficiency and result in "hot spots" at these locations, "heat cracks" go hand in hand with this condition.

Dirty and porous castings are the result of embodying some of the mold or core material, chiefly sand, in the metal of the casting. This occurs during the pouring of the casting, and may not be located by testing after machining. Sometimes a very thin skin of metal will be left, which at first does not leak nor occasion trouble but later on will develop into a leaky condition at this point.

A shifted core is the most common type of foundry defect, and is the result of a shifting of the core, or that part of the mold which forms the water jacket space, while pouring. While this does not alter the cubic dimensions of the water jacket spacing it does result in abnormally thin walls on one side of the casting with a corresponding thicker wall

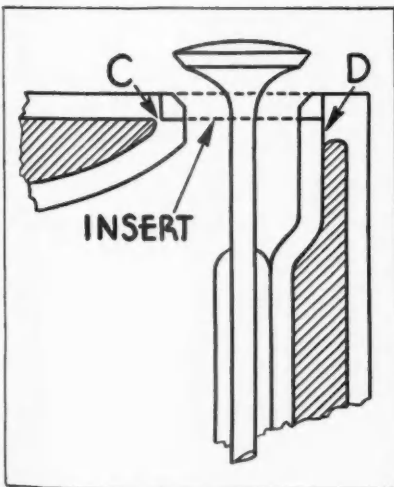
opposite. One evidence of this is a very thin cylinder wall on one side resulting in a cracked wall, especially after job is rebored.

This thin cylinder wall condition can sometimes be remedied by installing a cylinder sleeve, provided there is enough solid wall metal at top, and bottom to make a proper water seat of sleeve. Sometimes this shifted core condition is evidenced by an abnormally thin valve port section, especially just below the seat.

Speaking of cores let us remind

you that the so called "blowout" plugs are in reality "core plugs" to seal the openings made in the outside water jacket for the removal of the core material at the foundry.

Freezing as a reason for block failure need only be considered very briefly. Its causes are self evident and trouble is generally confined to the large, smooth outside water jacket walls of L type motors, principally on left side of motor where there is a minimum of tie up between outside, and inside walls. Failure



When valve seat inserts are recessed too deep the thin wall (C) between valve seat and water jacket may fail. Good clearance (D) prevents failure



Lubricating AUTOMOBILES and "PYREX" INSULATORS

Somewhere out there "Pyrex" Brand glass insulators are combating weather cycles of sun, snow, wind and rain—resisting the heat from destructive charges of lightning, flashovers and arcs—and all this, while supporting the heavy weight of miles of wire. Insulators do both a mechanical and electrical job—high voltage currents must surge hourly and surely from power plant to distant city.

Under sudden wind or temperature change, internal insulator strains are at their maximum. Either the metal cap, the glass part or its support must give. To ease the motion and redistribute the load, a coating of graphite is applied wherever metal and glass meet. This layer provides long-lived, dry and positive lubrication. CORNING GLASS WORKS, manufacturers and research specialists in this field, specify "dag" colloidal graphite in water for so lubricating and maintaining the strength of their insulators.

Likewise, with "dag" colloidal graphite in oil, a similar lubricating film can be formed on friction parts of automobile engines, providing the same dependability under high heat, heavy pressure and cold starting conditions. Research shows that wear is reduced by one half through the use of this supplementary lubricant.

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occurs very rarely on right, or valve side, except in blocks where valves are located in the head and of course hardly ever on inside of block.

Corrosion & Erosion

Corrosion and erosion are met chiefly in connection with marine engines. Erosion produces holes in the cylinder walls and other sections, where the cooling system allows a stream to impinge upon one spot. This stream carries considerable solid matter, sand, etc., and will wear

the cast iron away very rapidly. The remedy is simple. Install a baffle to change the direction or break up the velocity of water flow.

Corrosion is the deadly enemy of marine engines, especially those operated in salt water, and results in an unusually short life for those blocks, not especially designed for this service. When marine engines are equipped with water-jacketed exhaust manifolds, these manifolds are also subject to corrosion the same as the block and head.

This corrosion generally is early manifest in the exhaust valve ports just below the valve seats. It is first evident as a pin hole, which if explored will very easily enlarge to show this corroded condition generally all around this small hole. Corrosion effects are also evident in the water jackets of marine engines at the lowest point where jacket wall joins the cylinder wall on the outside. Sometimes the corroded condition at this point is not evident until the sand and scale is removed from the bottom of the water jacket.

Heat Cracks

Heat cracks are not really heat cracks, but contraction cracks caused by the sudden or rapid cooling and contraction of an overheated section of the block or head, generally including the exhaust valve seat, and the section immediately in line between the cylinder wall, and the valve port over which the exhaust gases pass. There are other critical points in an engine which we will discuss further on, and which are subject to this same type of failure.

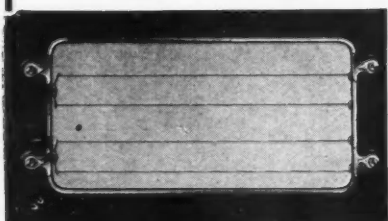
Metal expands when heated and shrinks or contracts if this heat is discontinued so hot metal occupies more space than cold metal. During normal operation this expansion and contraction is taking place all of the time. It is gradual and uniform and the whole casting is continually reacting to this law of expansion and contraction. As long as the action is uniform and gradual there will be no heat cracks. It is when this uniform and gradual contractive motion is interrupted that we meet trouble.

When we overheat one point in an iron casting, especially an inside section such as a valve seat, the metal expands at that point. This is a local expanding condition and causes the metal to push against the surrounding, and not-so-hot section. The not-so-hot section is not at the same high temperature and refuses to expand at the same ratio as the hot point.

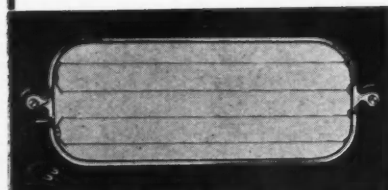
So what happens? The molecules of the very hot section grow, and tend to compress the mass of hot metal. This expanding and compressive action is outward from the center of greatest heat. If the block is allowed to lose its heat gradually the chances are that no failure will result because a great deal of heat is communicated to, and absorbed by the surrounding area. This will com-



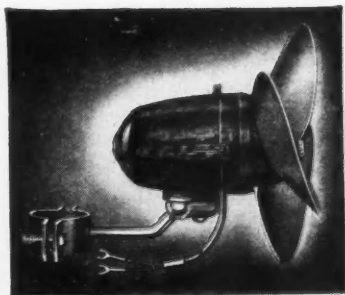
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Glass Size 16" x 8". 4 Heating Wires.



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The cost of these Defrosters is small compared with the time saved in driving schedules and relieved strain on your drivers.

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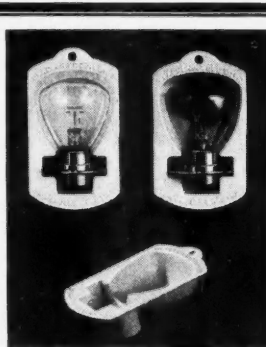
Also Casco illuminated Switches for Defrosters and Hot Water Heaters, Speed Warning Indicators, Fender Guides, Cigar Lighters, Grille Guards, etc.

Prepare trucks for Winter driving WITH THIS FAST...LOW COST G-E SAFETY LIGHTING SERVICE

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The G-E Lighting Service Kit contains reflector cleaning fluid, cotton to apply and remove cleaner, and a screw driver. It also has space for bulbs and may be hung from the bumper. Price 45c.



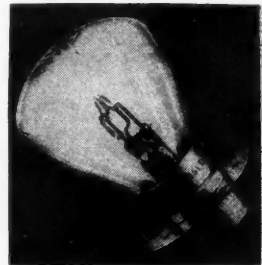
Blackened bulbs are contrasted with the white background of the G-E Blackening Detector which sells for 10c.

easy and inexpensive to check and maintain the efficiency of the lighting on your trucks . . . and to give your drivers more light for safer seeing.

The necessary equipment, available through the jobber who supplies you with G-E MAZDA Auto Lamps, includes: the G-E Adjustment Screen, shown on this page, 85c; the G-E Lighting Service Kit with materials for cleaning lenses and reflectors, 45c; and the G-E Blackening Detector, a useful device that shows up blackened bulbs, 10c.

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AUTO LAMPS. The headlight bulbs you use on your trucks can make a great difference in the kind and amount of light your drivers get on the road at night. One way to be sure they are getting all the light possible is to replace burned-out or blackened bulbs with G-E MAZDA Auto Lamps . . . because they are accurately made and tested for 165 possible defects that might affect their performance. Order a supply of G-E MAZDA Auto Lamps from your jobber today!



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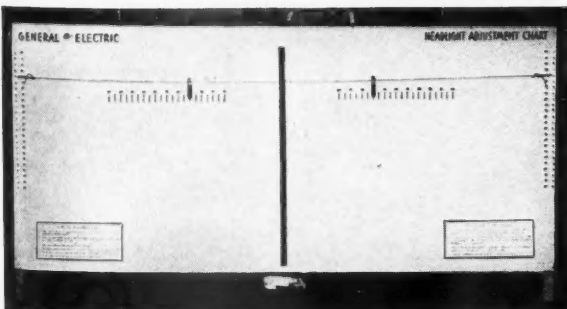
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The G-E Adjustment Screen (unmounted) measures 8' x 4'. It has flexible verticals and horizontals, thus eliminating confusion when adjusting headlamps. Price 85c net.

pensate for, and shrink with the very hot section; possibly not to the same degree, but enough to avoid any heat cracks.

If instead of contracting normally and gradually, the overheated section should be compelled to contract suddenly, as a result of the application of cold water there would be a decided interference with the normal laws of contraction. The very hot and outwardly expanded metal cannot resume its original volume fast enough, being held by the sur-

rounding metal, which has been cooled by the cold water. Since the surrounding section will not allow the very hot section to shrink normally, there is set up an internal stress. It can't shrink as fast as the surrounding metal and a crack is inevitable. The crack will occur in or near the center of area of greatest heat.

When an engine is operated with a failure in its cooling system, creating a low water condition, we get a very hot engine especially at the

valve seats. If cold water is added immediately to the system, it will suddenly cool the hot section, and its surrounding metal, and set up the contractive strains, as previously explained. This will produce a cracked valve seat. The exact result has been duplicated in the laboratory many times, by heating a casting over an area corresponding to the normal high heat point in the engine block, and suddenly cooling this point. The result is the same as if the cylinder block had been thus operated in actual service.

Such a heat crack generally shows a decided opening, and if such area be reheated, and allowed to cool slowly, the opening is reduced, generally closing the crack entirely. This opening is one of the earmarks of a contraction or heat crack, which serves in most cases to identify a contraction crack beyond all doubt. If such type of crack should appear in any other section it is undoubted evidence of the fact that the casting has been cooled unevenly. This does not necessarily have to appear at a point of high heat, but can be located anywhere at the center of strain.

Directional water cooling is responsible for many cracked valve seats. The usual design of such motors embodies a header, pipe or cored passage, inside the water jacket. Outlet holes opposite the exhaust valve seats carry the cold water from the radiator directly to the hottest points. This construction is ideal from the engine designer's point of view. It certainly does all of the cooling expected under normal operating conditions, but let the water level drop to a point just below the valve seats, and add cold water to the engine while it is running, and you simply pump this cold water directly to the hot valve seats resulting in an inevitable valve seat failure. Possibly this construction, which the writer finds admirable, is responsible for more cracked valve seats than all other conditions combined.

Certain types of cylinder heads will crack across the top water jacket. The crack runs from one side to the other or from one side to a stud, or spark plug hole. These are also contraction cracks caused by the difference in contractive speed between the cylinder block, and head (the head cooling first).

The cylinder block stores up more



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every day, every time, everywhere!*

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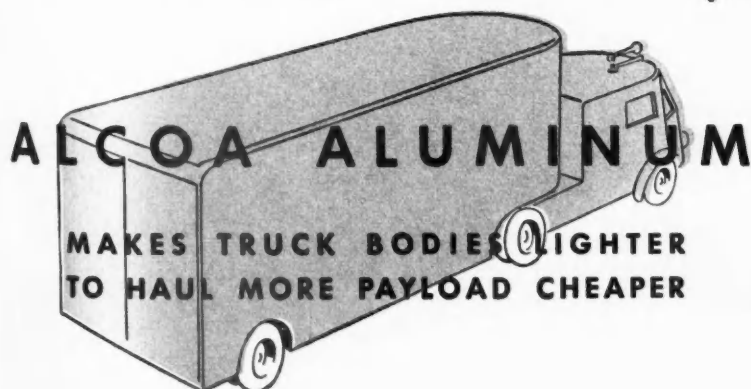
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Genuine Bendix Drive Springs are carefully made to exact dimensions from the highest quality materials. They give added value in longer service. Look for the name Bendix on every genuine part.



NATURE booted Dinosaurs out of existence long ago, because Dinosaurs were made inefficient by their heavy bodies. Today truck operators are booting out Truckosaurs, those trucks with heavy bodies made of heavy materials. Light bodies, built with light, strong alloys of Alcoa Aluminum, carry more payload at no greater operating cost, earn more on the money invested. What is your policy on heavy truck bodies?

Your job is easier when your trucks are fitted with light bodies built from light, strong alloys of Alcoa Aluminum. They not only show a better operating return, but they are strong to do the work without pampering. The reason "why" for strength is explained in the first note in the box at the right. Other points listed there will also interest you. Why not write today for the handbook which explains all the advantages of bodies built from light, strong alloys of Alcoa Aluminum?



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STRENGTH AND LIGHTNESS with **SAFETY** results when you build with light, strong alloys of Alcoa Aluminum. The material itself is light, so sections can be made thick, stiff, and strong. We cooperate with body builders to help you get the best results.

LONG LIFE — Often Aluminum bodies outlast several chassis. Finally, as salvage, they return far more. Reason: higher scrap value.

MAINTENANCE ON THE OUTSIDE — Paint holds to Aluminum better, lasts longer, giving more attractive units.

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DEFINITE FIGURES on savings for operations like yours have been compiled. These figures, with names of the companies supplying them, are available in a free handbook, "Alcoa Aluminum for Truck Bodies." Send for your copy today. ALUMINUM COMPANY OF AMERICA, 2139 Gulf Building, Pittsburgh, Pa.

heat than the head, and cools more slowly than the head. The contractive force is greatest on the top water jacket surface of the head in a line running from front to back, and this strain applied time, and again, eventually results in a crack. This does not occur in all engines, but only in those whose design, and operating conditions are such as to produce material differences in contractive speed between the head and block when cooling.

A 5-Point Remedy

It is only fitting that after pointing out these reasons for failures that we suggest preventive measures, which will reduce financial loss, and idle time.

(1) Do not run an engine if there is the slightest water leak, or if the radiator shows a tendency to boil easily.

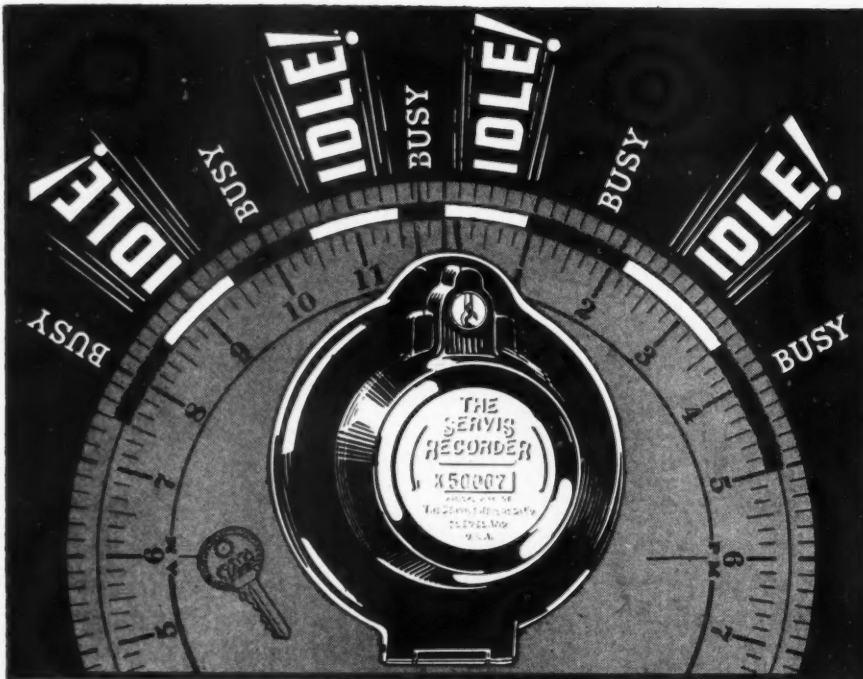
(2) If the radiator boils easily check it on a Flowmeter. If necessary flush or boil out to restore the cooling function 100 per cent. At

the same time clean out the water jacket of the block by removing the water jacket cover plates and all core plugs, and removing all possible sludge and rust mechanically. It is not sufficient to clean the radiator alone as the sediment and scale in the block will soon clog the radiator again if not removed.

(3) Clean out all water by-pass holes between cylinder block and head to original sizes.

(4) Don't add water while engines are excessively hot.

(5) Don't operate a motor that shows a tendency to overheat easily.



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Your truck stood idle between
10:30 and 11:30—an hour of unproductive time!

You can't miss it. That blank space on the Servis Recorder chart jumps out at you. It shouts, it doesn't whisper! And an hour's time of a motor truck, what does it cost? Maybe two or three dollars.

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It's like a picture. You get it at a glance. Then you become amazed to discover what you can save in valuable truck time—an hour or two a day! an extra trip! more work with the same

number of trucks! a check on speeding!—on overtime! routes evened up, and a better moral effect all around.

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The Servis Recorder
Tells Every Move Your Truck Makes

QUIZ ANSWERS

(SEE PAGE 17)

1. Fifth
2. Wood—according to the New York Times correspondent on Sept. 1.
3. Red—specified in section 382 of the Manual of Uniform Control Devices for Streets and Highways.
4. Color Blindness.
5. Camelback.
6. 1904—Production 411; Registration 410.
7. More than 1000 miles. The diameter of the 36 x 8 tire is slightly larger.
8. 20/100 of 1 per cent of carbon.
9. An arbitrary numerical designation given for a range of seconds permitted in a standard SAE test.
10. R. W. Rudden was elected president in January, 1937, following Mr. Pulcher's retirement.

FWD Renames Officers and Directors

W. A. Olen, Frank Gause and D. J. Rohrer were unanimously elected to succeed themselves as directors of the Four Wheel Drive Auto Co. at the annual stockholders meeting, held in Clintonville, Wis. on Sept. 13. Mr. Olen was also reappointed president and general manager with Antone Kuchuck, J. D. Cotton and H. M. Daniels as vice-presidents. Mr. Rohrer and Mr. Gause were renamed as treasurer and secretary, respectively.



With its huge tractor tires the Studebaker has made fishing profitable at Laguna Madre south of the Rio Grande. But not without incident is the 30-mile run to Texas as evidenced by the built-in winch—just in case

COMMERCIAL CAR JOURNAL
OCTOBER, 1938

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* REDUCES
HEAT FAILURES
83%

GREATLY
INCREASES
MILEAGE

STOP YOUR LOST TIRE MILEAGE

With This Amazing New Seiberling!

In actual service on high speed runs on Florida's Tamiami Trail—and under the most severe heat and road conditions in Texas, this tire is delivering phenomenal mileage. Premature failures are practically eliminated.



No Tread Separation . . .

because the internal heat, that causes separation in most tires, escapes quickly through these patented "heat-vents."

Built on Two New Principles—Slashes Cost per Mile Figures

1 A new-style "Heat-proofed" carcass that can absorb terrific punishment and strain!

Built of Seiberling's new "Saf-Flex" cord, the carcass of this remarkable truck tire is unsurpassed in its ability to resist strain and abuse. It generates less heat than ordinary tires—retains its freshness and tensile strength throughout its life—stops tread cracking and does not "grow" in service.

2 Patented Heat-Vents Expel internal heat.

Not satisfied with reducing the amount of heat generated, Seiberling actually EXPELS any heat that *does* form. As the tire revolves, a series of "heat-vents" in the shoulder open and close—expelling the internal heat that causes blowouts and tread separation . . . and pulling in cold air that makes the tire run cooler and therefore last longer.

*And here's evidence of what the tire will do for you.

Over a large number of test miles under extreme difficult conditions, failures were reduced 83% and the average mileage of tires out-of-service was 205% over the same tire without vents. For full details on the performance of this amazing new tire, send for our "Heat-Vent" folio. Mail us a letter or postcard today!

THE SEIBERLING RUBBER COMPANY • AKRON, OHIO, U. S. A.

SEIBERLING

PLEDGE

(CONTINUED FROM PAGE 29)

Safety and his entire staff as our guests. This year we brought Allen B. Hill, who recently won the title of "World's safest truck driver," from Corpus Christi, Tex., as our special guest. His part on the program consisted of a "question and answer box," wherein our drivers offered the questions and he answered them. This proved to be one

of the finest things we have ever had at any of our meetings. Either our honor guest or some visiting

THE RECORD IN FIGURES

	Total Liability Accidents	Number of Accidents Due to Backing	Average Accident-free Miles	Number of Trucks in Use	Average Tire Mileage	Average Speedometer Reading
1st Year	5	2	121,548	28	30,348	62,395
2nd Year	7	4	90,224	29	35,163	67,142
3rd Year	4	2	174,428	35	36,603	77,206
4th Year	10	5	61,005	36	35,080	87,070
5th Year	4	2	168,240	39	37,245	74,011
1/2 of 6th Year ..	6	2	59,356	40	77,689
Total: 5 1/2 Years	36	17	99,338			

executive makes the presentation speech to our drivers who receive their awards. This year Mr. C. A. McGill, of the B. F. Goodrich Rubber Co., in Kansas City, occupied that position.

This year we started a new stunt in connection with our Annual Drivers' meeting by bringing to McAlester a day ahead of the meeting those drivers who had attained a five-year or better record of driving without an accident. We took them to a nearby lake resort and served them a fine fish dinner and procured a large cottage and "turned them loose" until the following morning. We provided them with necessary equipment to spend an enjoyable evening together. Next morning they were served a fine breakfast then came to our regular meeting. These drivers formed a special club with membership limited to those drivers who from year to year attain a five-year no-accident record and we have promised them this same type of entertainment each year in the future.

When we purchase new trucks we select drivers who are leading in the safety campaign and give them the trip to the factory for the new trucks.

We keep in touch with our insurance company as to the analysis and ultimate cost of every accident and then publish these facts to all of our drivers. Often we submit facts in a doubtful accident to the National Safety Council for advice and suggestions.

Of course in the national contests in which we are entered we report every accident regardless of whether it is a liability accident or not but as stated above we do not penalize our drivers except on liability accidents. When a driver has one liability accident he loses his safety record and must start all over again. If he has two liability accidents in a twelve-month period he is either released or if we have a job open in

(TURN TO PAGE 72, PLEASE)

Made for each other



MIDLAND POWER BRAKE KITS

are engineered expressly for
FORD • CHEVROLET • DODGE
G.M.C. and INTERNATIONAL



LOOK AT THESE MIDLAND FEATURES

Quickly and easily installed
Interchangeable in fleet operation
Simple in design . . . rugged in construction

Fully complies with all city and state laws

Factory rebuilt exchange plan
Nation-wide Midland service organization

IT COSTS NO MORE—and generally less—to equip your fleet with engineered Midland Power Brakes. Then you *know* that each part has been made for each other, and that each kit has been made to fit *your* truck or tractor.

Don't take a chance with misfit power brakes. Specify Midland, the choice of prominent fleet operators and chosen as *standard equipment* by leading manufacturers. Phone your nearest Midland distributor today for complete information or write us direct.

THE MIDLAND STEEL PRODUCTS CO.
10605 Madison Avenue • Cleveland, Ohio

► See Our Exhibit at the National Motor Truck Show ◀



MIDLAND
(CHRISTENSEN)
Power Brakes





● *More miles—safer miles for every dollar you invest—that's the story of WEED American Bar-Reinforced Tire Chains.*

Double-welded Bar-Reinforcements on the cross chains provide twice the metal to wear through. They effectively stop *both* forward and side skid. Weedalloy, the metal used in WEED Americans, is unusually tough and wear-resisting, especially developed for tire chain use. Side chains are welded and case-hardened—another assurance of long mileage.

Standardize on WEED American Bar-Reinforced Tire Chains and cut your per-mile chain costs.

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT, CONNECTICUT

IN BUSINESS FOR YOUR SAFETY



**SEND FOR
FREE CHART**

25% to 50% can be added to chain mileage by proper installation. Send for free chart that shows how to apply chains so that all cross chains get equal wear.

WEED WEED American Bar-Reinforced TIRE CHAINS

Licensed to manufacture and sell Bar-Reinforced Tire Chains under United States and Canadian Letters Patent: American Chain & Cable Company, Inc.; The McKay Company; The Hodel Chain Company; Pyrene Manufacturing Company; Dominion Chain Company, Limited; and Pyrene Manufacturing Company of Canada, Limited.

COMMERCIAL CAR JOURNAL
OCTOBER, 1938

When writing to advertisers please mention Commercial Car Journal

(CONTINUED FROM PAGE 70)
our warehouses we transfer him to that work.

Our fleet was awarded a certificate of merit in 1936 and again in 1937 in the American Trucking Association's National Safety Driving contest.

We have a vehicle membership in the National Safety Council and each month every driver receives the magazine "The Safe Driver." Weekly they receive safety dash cards for their truck. We also use the poster

service of the National Safety Council and thereby receive a large and a small poster each week which are placed on bulletin boards at each of our houses. We keep a large bulletin board in the garage which shows at all times the safety driving record of every driver in the company. We procure all safety literature possible from many sources all through the year and pass it on to our drivers. We write them "pep" bulletins with regularity.

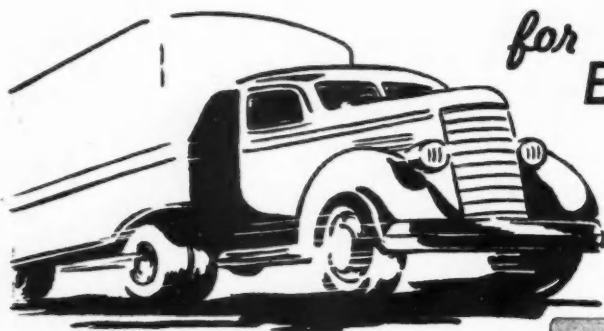
We very often hear most compli-

mentary remarks from outsiders to the effect that our drivers are the safest, most courteous drivers on the highways of this state.

For several years we have bought uniforms for our drivers, purchasing them at wholesale, and selling them to the drivers at absolute cost and permitting them to pay for them in small weekly payments.

We operate our own garage for
(TURN TO PAGE 74, PLEASE)

Genuine CUSTOM-BILT Duo-Coe BRAKE BLOCKS



for **SAFETY
ECONOMY**

● **GATKE CUSTOM-BILT BRAKE BLOCKS and Linings** are the result of many years of continuous research for better materials to produce *Dependable, Quick, Smooth Stops* under all climatic conditions.

Dependable BRAKES—are most **Economical**—avoid delays—and make **Schedules**.

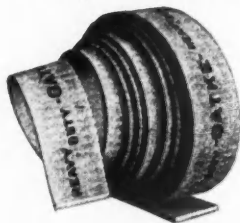
Ask your Gatke Jobber or Write for Material Recommendation to Produce Better Brakes and Save Time in Brake Adjustments.



Genuine Custom-Bilt
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Heavy Duty Brake Blocks
all Types and Sizes



Gatke Heavy Duty
Woven Brake Lining

GATKE CORPORATION

228 N. La Salle St.



Chicago, Ill.

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ACCIDENT REPORT	
DATE OF ACCIDENT	19____ HOUR OF ACCIDENT ____
PLACE WHERE ACCIDENT HAPPENED	(STREET)
(CITY)	(STATE)
DIRECTION YOU WERE MOVING	HOW FAST
DIRECTION OTHER CAR OR PERSON WAS MOVING	HOW FAST
OTHER DRIVER AND OTHER CAR	
CHAUFFEUR'S LICENSE NUMBER	
DRIVER'S NAME	ADDRESS
	PHONE NUMBER AGE
NATIONALITY	DRIVING EXPERIENCE
CAR OR TRUCK LICENSE NUMBER	
OTHER CAR: MAKE	TYPE YEAR MADE
OWNER OF OTHER CAR: NAME	
ADDRESS	PHONE NO.
WITNESSES	
NAME	ADDRESS
NAME	ADDRESS
NAME	ADDRESS
	(OVER)

INJURED PERSON	
NAME	
ADDRESS	
EXTENT OF INJURIES	
DAMAGED PROPERTY	
NATURE OF DAMAGE TO YOUR TRUCK	
NATURE OF DAMAGE TO OTHER CAR OR TRUCK	
NATURE OF DAMAGE TO PROPERTY OF OTHERS	
DESCRIBE HOW ACCIDENT HAPPENED	
BE SURE TO NOTE ANY UNUSUAL CONDITION OF OTHER DRIVER, CONDITION AND TYPE OF ROAD ALSO CONDITION OF WEATHER.	
SIGNED	(DRIVER)
(GIVE THIS CARD TO YOUR MANAGER WHEN YOU MAKE PERSONAL REPORT OF THE ACCIDENT TO HIM.)	

The two-sided report card provides space for essential accident facts

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OCTOBER, 1938

TOLEDO

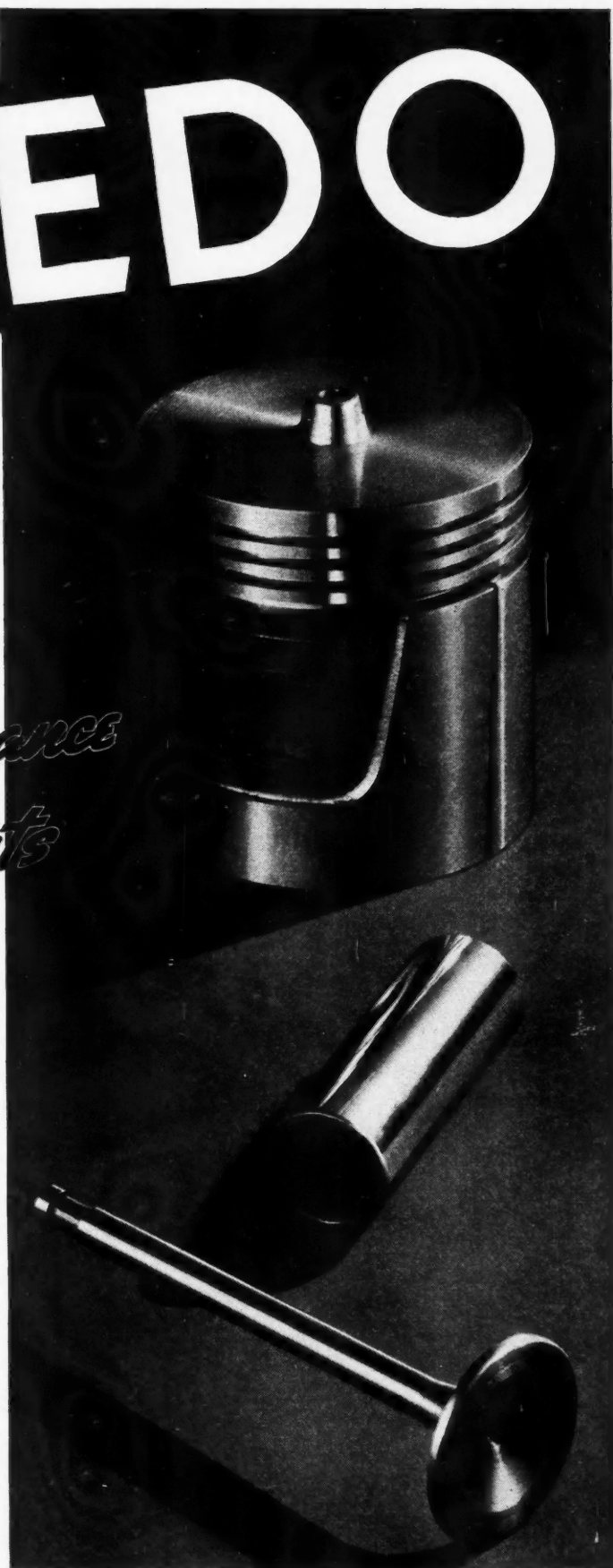
AEROTYPE VALVES

AEROTYPE PISTONS

CHROME-PLATED PINS

*For extra performance
and lower costs*

Fleet owners everywhere are reducing maintenance costs by installing Toledo Aerotype Valves, Toledo Aerotype Pistons and Toledo Chrome-Plated Piston Pins. These superior parts give more miles, longer service, trouble-free performance. Prove it to yourself; make your fleet Toledo-equipped, and check your savings. You can depend on your jobber for prompt service.



THE TOLEDO STEEL PRODUCTS COMPANY, TOLEDO, OHIO, U. S. A.

Warehouses: Atlanta • Boston • Chicago • Cleveland • Dallas • Detroit • Kansas City • Minneapolis • New York
Philadelphia • St. Louis • Los Angeles • San Francisco • Portland • Seattle

(CONTINUED FROM PAGE 72)
the maintenance of our 40 trucks and practice preventive maintenance at all times. Each vehicle is brought in in regular turn for inspection and repairs regardless of whether the driver has made any complaint on the vehicle or not. Our trucks are equipped with all safety devices required by law and in addition are equipped with flashlights and first-aid kits. Also we had metal "no rider" signs made which are fastened to the front of the trucks thereby

eliminating stickers from the windshields.

We replace our truck tires before they are worn to the extent that they are dangerous. All trucks are equipped with accident report cards which the driver must fill out at the scene of any accident. They are also equipped with cards for reporting defects or needed repairs to their trucks. In addition to this they have "road trouble report cards," which we have found extremely worthwhile.

DETROIT

VOTES

(CONTINUED FROM PAGE 31)

This was too much for Commissioner Beyster who had data available to show that the city could save some \$500,000 annually by owning and operating its own fleet. Said he:

"Checking with other large cities, we found that in some cases the cost of similar trucking was half that paid by the City of Detroit. Without permission of the Council, we asked for bids from several independent trucking companies and found that if an outside contractor were given this work, a saving of roughly \$600,000 could be effected. We therefore decided that the men having this day-to-day contract were not doing the work or their prices were too high.

"We then approached some of the truck manufacturers to find out the daily cost of buying a truck and its operation, figuring that we could pay for these trucks out of the savings, over a 30-month period. These prices also proved that there was a saving of roughly \$500,000 to be made.

"When we estimated the cost of purchasing new equipment and operating the same by the city, with the advantages of the city purchasing gas at seven cents and oil at 22 cents, no State license and a proper tire contract, we found that this saving could readily be effected."

There was still further evidence in the fact that the city already operates, most economically, its own fleet of 156 vehicles used in garbage collection.

The DPW immediately petitioned the Council to hold the per diem trucking rate to the 1937 figures of \$18.90 and \$11 respectively. The petition was granted.

Following studies made by the DPW engineers, Commissioner Beyster requested permission of the Common Council to purchase 50 trucks and trailers, as part of his economy program. Twenty-five units were to be cab-over-engine type, 10-yd. capacity; 25, tractor type with 14-yd. trailers. Operating cost of these vehicles was estimated at approximately \$13 per day, including an hour of overtime for the driver.

(TURN TO PAGE 81, PLEASE)

WHY

Does the
World's
Largest

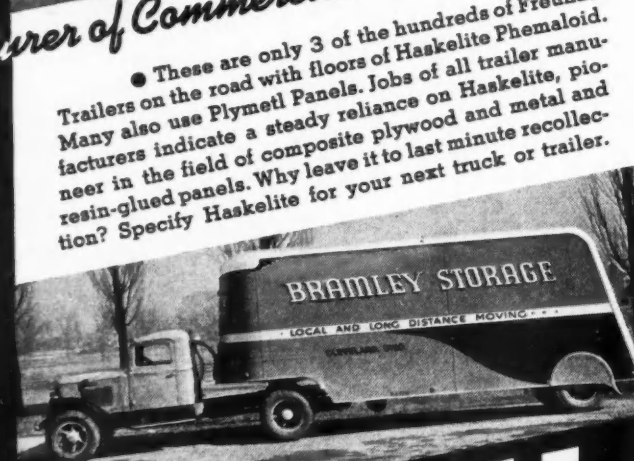
Manufacturer of Commercial Semi Trailers

Regularly

Use

HASKELITE

HASKELITE MANUFACTURING CORPORATION
208 West Washington Street, Chicago, Illinois
Offices in Detroit, New York, Los Angeles



(CONTINUED FROM PAGE 74)

This program, coupled with the savings accruing from the maintenance of the 1937 rate for contract equipment, is estimated to produce a saving of \$500,000 in the first year of operation. More important than this, however, is the fact that the contract with the truck manufacturer specifies payment out of operating expense for a period of 30 months. At the end of that period the City of Detroit assumes title to truck equipment having an inventory value (new) of approximately \$200,000.

From the standpoint of the progressive fleetman, whether he be a contract hauler or one owning his equipment, the impressive fact brought out by Commissioner Byster is that the larger percentage of the contract trucks used by the City of Detroit are obsolete vehicles, some of which are at least 15 years old. Not only are they inefficient in operation but they are uneconomical in design. For example, most of these trucks have a height of 9 ft. from ground to top of side, making it necessary for the loaders to lift containers or shovel loads almost 10 ft. Contrast this with modern trailers having a height of only 5 ft. 7 in. from the ground to the top of the body side.

In addition, the cab-over-engine type of vehicle has been found to have much better maneuverability in the narrow alleys, particularly in T-alleys where the older vehicles find it quite difficult to get around.

Taxes Jump 700% in 15 Years

Special motor vehicle taxes paid by highway users have increased more than 700 per cent in 15 years, with the result that the total of such payments exceeded the amount of money spent for all state and county highways, including connecting streets through cities and towns.

This is revealed in a study issued recently by the National Highway Users Conference under authorship of John E. Walker, former special assistant on taxation to the Secretary of the Treasury.

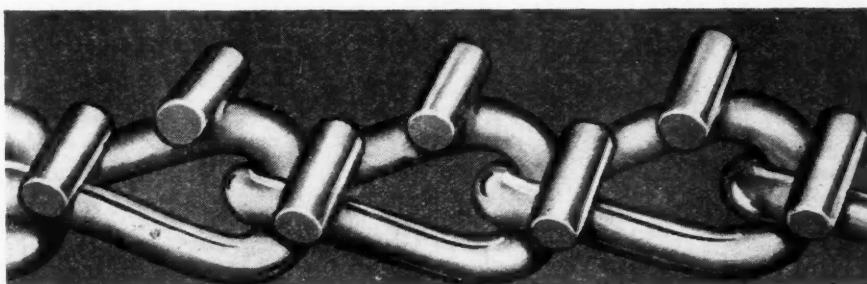
The study shows the average per-vehicle payment of special motor taxes jumped from \$12.22 in 1921 to \$48.15 in 1936, the most recent year for which official figures are available. The average special taxes paid by the various classes of motor vehicles were: passenger cars, \$38.78; privately-owned and operated trucks, \$80.83; contract carrier trucks, \$161.66; common carrier trucks, \$242.49, and common carrier buses, \$785.22.

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OCTOBER, 1938

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MCKAY

MULTI-GRIP



saves you money!

Look at those securely welded, case-hardened steel Bars on each MULTI-GRIP cross chain. Not just *one* Bar per link—but TWO!

You can see why they give you double—or BETTER—the mileage!

You can see why they bite in like spurs—and retain their sharp corners and edges!

And that's not all! MULTI-GRIP saves your operators' time in putting chains on . . . taking them off—because MULTI-GRIP has another exclusive McKay feature—the "lightning-fast" Klip-Lock.

All McKay Truck Chains (Multi-Grip; Regular; Extra-Heavy; Rubber) have this same, speedy Fastener. And you'll cut your traction costs and save delays (this winter) by talking to your McKay Jobber NOW about your probable requirements.

THE MCKAY COMPANY
McKay Building, Pittsburgh, Pa.

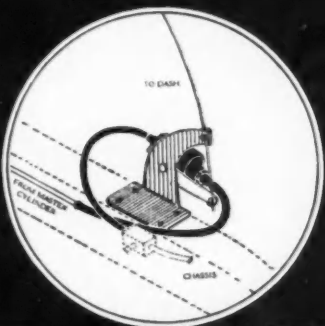


McKAYS
*are the choice,
by competitive
test, of many of
the largest fleets!*

MCKAY TRUCK CHAINS

Licensed to manufacture and sell Bar-Reinforced Tire Chains under United States and Canadian Letters Patent: The McKay Company; American Chain & Cable Co., Inc.; The Hodel Chain Co.; Pyrene Mfg. Co.; Dominion Chain Co., Ltd.; and Pyrene Mfg. Co. of Canada, Ltd.

Reduce
JACKKNIFING
on
ICY PAVEMENTS
with
BRAKE CHECK



PATENT

PENDING

Each winter brings back that old dangerous bugaboo—jackknifing. It's inevitable when front brakes are applied on icy pavements.

This winter eliminate the jackknifing bugaboo with **BRAKE CHECK**, the front wheel control which allows the driver to cut off the front wheel brakes and throw the braking responsibility to the rear wheels which carry the weight and hold the road.

Fleet operators everywhere are equipping their trucks with **BRAKE CHECK** because they know they can reduce winter accidents and maintain operating schedules the year round.

How It Operates

A simple ball valve is attached to the frame. Flexible tubing is cut into the T or cross fitting so that the brake fluid may be directed through the valve and back into the line. A control wire to the dash tips the valve dropping the ball into the seat to cut the pressure to the front brakes. The wire regulates the valve to return the front brakes to operation. Cannot leak. **BRAKE CHECK** is easily installed—complete instructions come with every unit. Price ten dollars.

Some territories open for reliable jobbers.

Ask the Driver—He Knows

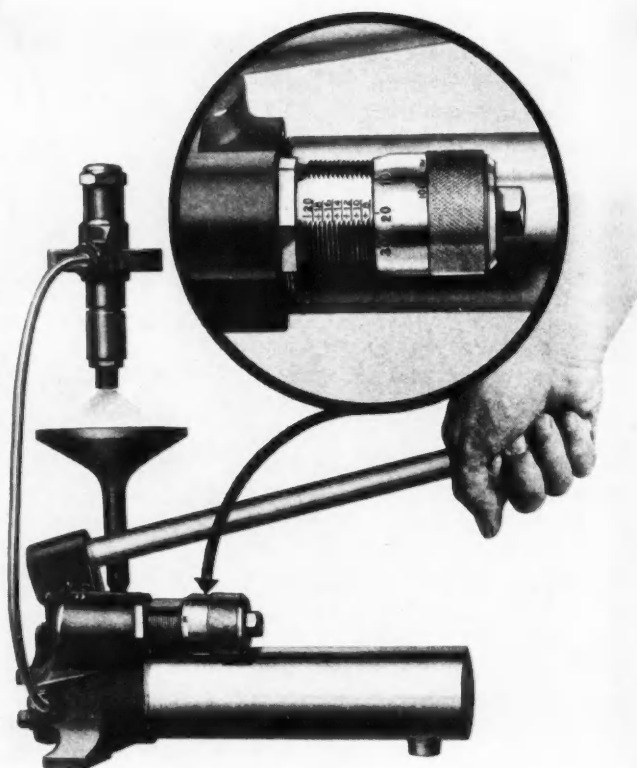
BRAKE CHECK SALES CO.
NOT INCORPORATED
7345 Harvard Avenue,
CHICAGO, ILLINOIS

WAUKESHA DIESEL NOZZLE TESTER

FROM the fuel research laboratories of the Waukesha Motor Co., Waukesha, Wis., comes a new precision tool for testing diesel injection nozzles of every standard make. The device should be of real interest to diesel owners for with it it is possible to determine spring pressure and correct adjustment, quality and pattern of

spray, the condition of valve seat and amount of dribble or leakage, stuck needle valves and other irregularities. Once these defects, not readily detectable by the driver are discovered they can easily be corrected.

The tester consists of a hydraulic pump element operated by a long hand lever. Fuel oil used for testing is contained in the horizontal cylinder directly below the operating lever which forms a reservoir with a capacity of approximately one pint. It is filled through the funnel shown at the left with the same kind of diesel fuel oil as used in the engine. This oil is delivered to the pump element through a filter to prevent



Waukesha diesel nozzle tester showing micrometer adjustment.

foreign matter from entering the hydraulic unit or the nozzle under test. Fuel is forced by the pump through the high-pressure injection tubing and discharged from the nozzle into the funnel and thence returned to the reservoir and re-circulated.

A balanced by-pass valve connects the delivery passages drilled in the malleable iron pump head with a return port leading to the oil reservoir. By controlling the spring tension on this by-pass valve, the pressure in the nozzle line may be adjusted with great accuracy for any required nozzle setting.

This adjustment is accomplished by a knurled micrometer head. One

As Often as You Ask the Question

① **COMMERCIAL CAR JOURNAL LEADS** ①
in Fleet Operator Reader Preference

Webster-izing

THE HIGHEST QUALITY OF RETREADING—RECAPPING

Only authorized Webster-izing Agencies can offer this Double-Guaranteed process to extend your retread—recap mileage to new or better than new-tire tread mileage.

WEBSTER RUBBER COMPANY, WARREN, OHIO

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OCTOBER, 1938

complete revolution changes the discharge pressure 100 lb. Graduation on the head itself permits settings of 10-lb. intervals by the calibrated thimble while 5-lb. adjustments are easily estimated because the graduation marks are liberally spaced.

All high-pressure parts are substantial, durable, malleable iron, heat-treated steel, and chromium-plated brass being used throughout. Ordinary wear, even after testing tens of thousands of nozzles, has no effect on the accuracy of this instrument. The entire equipment weighs less than 20 lb. and is furnished with high-pressure injection tube connector and fittings, chromium-plated funnel, and full instructions. The list price is \$35. Write to the Waukesha Motor Co., Waukesha, Wis. for further details.

A Challenge from King Cotton

Taking issue with an article appearing in a recent issue of *Time* magazine to the effect that synthetic rayon cord for automobile tire fabric might displace cotton and therefore lose for cotton farmers one of their largest markets, Wm. D. Anderson, president of Bibb Mfg. Co., one of the largest producers of cord fabric, pointed to recent developments in the processing of cotton, which, he stated, produced a Heat Resistant Cord far superior to any synthetic type.

"The new cord," said Mr. Anderson, "out-lives any rubber yet compounded for automobile tires. Cotton fiber is as strong as

A Trucktored Six-Wheeler affords maximum Hauling Capacity—with SAFETY.

This type of vehicle can be sent out on the road in all seasons and in all kinds of weather with assurance that it will get thru to destination and back again with minimum risk from costly accidents.

A Trucktored Six-Wheeler is a one unit vehicle. It does not easily skid and cannot jackknife. It brakes effectively in one operation and is free from the braking complications that sometimes cause trailer-truck smashups.

TRUCK SAFELY WITH TRUCKTOR! See our Exhibit at The NATIONAL TRUCK SHOW, New York. Send for Literature.



**TRUCKTOR—
Used by Major
Oil Companies**

THE TRUCKTOR CORPORATION • 156 WILSON AVE., NEWARK, N. J.

steel. The tensile strength of cotton cord depends upon the resistance to slippage of the individual fibers. Through a revolutionary new principle in processing cotton, a way has been discovered to soften the natural gums and waxes inherent in every cotton fiber and to fuse the cotton fibers with these gums and waxes as they are re-hardened so that they become set and bonded to a degree never before attained. The new process provides a cord which retards the generation of heat in an automobile tire, but even more important, produces a cord which maintains uniform tensile strength under the high temperatures necessarily generated in any tire when subjected to hard use and heavy loads at sustained high speeds. Under operating conditions this new type Heat Resistant Cord is 25 per cent stronger than ordinary cord and flex breaks have been eliminated.

"With this increased strength comes a more compact, lighter cord, which enables the tire manufacturer to secure the strength and safety of a 6-ply tire with a 4-ply construction. The Heat Resistant Cord prevents 'tire growth' and tread cracks, which cause premature tire failure.

"The future problem of the tire industry is not to find a substitute for cotton," Mr. Anderson concluded, "but to develop new rubber compounds, which will last as long as the Heat Resistant Cord fabric now at the command of the industry."

Leading manufacturers are now using the new Heat Resistant Cord, especially in the manufacture of heavy duty truck tires.

C. A. VanDusen, president of VanDusen Auto Repair and Machine Co., Toledo,

Trucktor
**CREATES RELIABLE
6 WHEEL TRUCKS**

**For High Hauling Income
And SAFETY That Pro-
tects Trucking Profits.**

Ohio, died recently. His company is one of the oldest distributors in the country for the hoist and body division of Gar Wood Industries Inc., Detroit.

JONES PORTABLE TACHOMETER



The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds, for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co., of La., N. J., N. Y.; Shell Petroleum Co., Atlantic Refining Company, Tidewater

Oil Company, Keeshin Motor Express, Mack Trucks, Brockway, U. S. Navy.

Direct, instantaneous reading
JONES-MOTROLA-STAMFORD, CONN.
432 FAIRFIELD AVENUE

Avoid Vapor Lock

An electric fuel pump. Installed close to fuel tank, it pushes fuel to engine, avoiding vapor lock. Thoroughly reliable. Applicable to any gasoline-driven vehicle. Will not flood.

KING-SEELEY CORPORATION
ANN ARBOR, MICH.

KS FUEL PUMP

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OCTOBER, 1938

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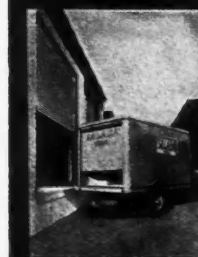
IT PAYS TO BUY

EDWARDS
QUALITY
SEMI-TRAILERS

EDWARDS IRON WORKS, INC.
SOUTH BEND, INDIANA

KINNEAR TRUCK DOORS

Also Doors for Buildings

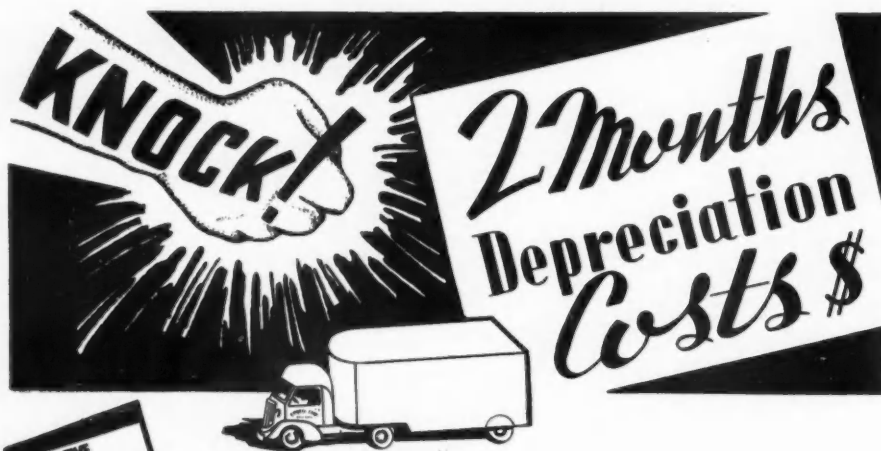


ALL METAL . . .
. Coils like a window-shade, out of the way
**CONVENIENT
BURGLAR PROOF
FIRE PROOF
MORE DURABLE**

Write for Details

KINNEAR

Manufacturing Company
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COLUMBUS, OHIO



FREE

48-page Automotive Cleaning Handbook. Goes thoroughly into all cleaning problems connected with truck operation and maintenance. Send for your copy TODAY.

... Off Each Truck You Keep in Regular Service!

Leading operators everywhere report that the savings they make in material, labor and time costs by using MAGNUSOL, the perfect motor and chassis cleaner, equals 2-months' depreciation write-off for every truck they operate.

MAGNUSOL takes the "cling" out of grease and oil. . . . In a cold tank, it cleans small parts quickly and thoroughly. . . . cleans exteriors without injury to finish. . . . undergear is rapidly made ready for inspection. . . . cement floors are cleaned with it without time-taking scraping, . . . etc.

MAGNUS CHEMICAL COMPANY

Manufacturers of Cleaning Materials, Industrial Soaps, Metallic Soaps, Sulfonated Oils, Emulsifying Agents and Metal Working Lubricants.
38 South Avenue Garwood, N. J.



MAGNUS CLEANERS

Private Truck Operators Find "Carrier" Designation Misleading

A drive to eliminate the word "carrier" as it applies to transportation by shippers and farmers in

their own trucks without compensation is expected as an early and important move on the part of the newly organized National Council of Private Truck Owners.

In preparation for its move the Council has had a report on "What is a 'Private Carrier'" drawn up by one of the industry's leading attorneys. It is expected that the brief will play an important part in the Council's actions. Here is the brief:

1. What is a "Motor Vehicle Private Carrier?"

2. Those owning and operating commercial motor vehicles for the transportation of commodities as an adjunct of or an incident to the business activities in which they are principally engaged must find a satisfactory definition and circumscription of this expression for inclusion in federal and state laws dealing with "motor vehicle carriers" or face the limitation or even loss of the inherent rights they now possess in the free, efficient and economic use of motor vehicles in serving their customers.

3. A "carrier" in the eyes of the common law as set forth in Bouvier's Law Dictionary is:

"One who undertakes to transport goods from one place to another. They are either common or private."

According to the definition set forth in the Funk and Wagnalls New Standard Dictionary a "carrier" is specifically stated to be:

"A person or company that undertakes to carry or makes a business of carrying persons or goods for hire, as a railroad company, expressman, etc."

4. A "private carrier" as indicated by Bouvier is:

"One who agrees in some special cases with some private individual to carry for hire, as distinguished from a common carrier, who holds himself out to all persons who choose to employ him as ready to carry for hire."

5. Under the Federal Motor Truck Carrier Act applicable to those engaging in the transportation of commodities in interstate commerce by means of motor vehicles, a private carrier receives the following definition:

"The term 'private carrier of property by motor vehicle' means any person not included in the terms 'common carrier by motor vehicle' or 'contract carrier by motor vehicle,' who or which transports in interstate

Sterling MOTOR TRUCKS

DIESEL AND GASOLINE

GREATER PROFITS

Cost sheets tell the story! Net savings of over \$15,000.00 per truck. An achievement of Sterling Diesel powered motor trucks —trucks which have traveled in excess of one-half million miles and are still in operation.

Be sure of maximum returns on investment. Select Sterling motor trucks for superior performance and lower operating costs. Write for full information.

STERLING MOTORS CORPORATION
MILWAUKEE WISCONSIN

WAUKESHA

- Comet Diesel
- Hesselman
- Gasoline
- Hy-Powr
- Ricardo Head



ENGINES

FRANK SNOW-PLAWS

Both "V" TYPE and ONE WAY BLADE TYPE

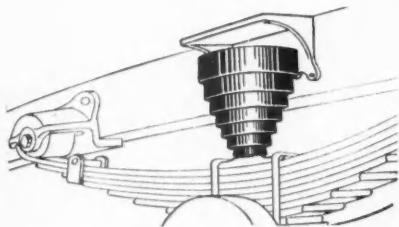
hand or power hydraulic control

FOR ALL MOTOR TRUCKS
FROM 1½ to 10 TONS

Write for catalog 38AC and 38BC
with discount to truck dealers.

CARL H. FRANK, Mfr.
CLAYTON 1000 ISLANDS NEW YORK

Ease the load On Your Main Springs with



BORDIK Shock Absorbing Auxiliary SPRINGS

- 1 Bordik Auxiliary Springs make the ride level and shock-proof for heavy and uneven payloads.
- 2 Control road bounce, side-sway and heavy listing.
- 3 Hold the body up from striking the tires.
- 4 Easily installed without disturbing your present spring set-up.
- 5 Available for all trucks, buses, trailers, pick-ups and passenger cars.
- 6 Spring Capacities — 50 pounds to 14,000 pounds.
- 7 Cost no more than ordinary helper springs.

Agents in All Principal Cities. In ordering, specify make, model and year of vehicle.

Write at once for information.

ZINK-BORDIK PRODUCTS, INC.
421 East Adams St. DETROIT, MICHIGAN
Pioneer Designers of this type of Helper Spring Assembly

BUILT TO PUT MORE PAY IN EVERY PAYLOAD

Arrange for an "on-the-job" test today
112" wheelbase Ford V-8
Commercial Cars

122" wheelbase One-ton Trucks
134" and 157" wheelbase Trucks
101" and 134" Cab-over-Engine Trucks
FORD V-8 TRUCKS



A Complete Line of HYDRAULIC JACKS

Built Right . . . Priced Right

HEIN-WERNER MOTOR PARTS CORP.
Waukesha, Wisconsin

HEIN-WERNER
hydraulic JACKS

commerce by motor vehicle property of which such person is the owner, lessee, or bailee, when such transportation is for the purpose of sale, lease, rent or bailment, or in furtherance of any commercial enterprise."

6. According to the laws of many of the forty-eight (48) states which have dealt with the subject, private carriers are this, that and the other thing.

7. The really vital consideration is that under many of these statutory definitions and the rules and regulations which have been or may be promulgated thereunder the operation of a motor vehicle by an oil company, brewery, milk company, etc., in conjunction with their main business activities may be interpreted as a "Motor Vehicle Private Carrier" operation.

8. The implications of such an interpretation would be the necessity of showing public convenience and necessity or the obtaining of permits, the regulation of capital investment and the fixation of rates and all of the other regulations and requirements which are imposed upon those who are principally and primarily engaged in the business of transportation.

9. Moreover, such a broad interpretation and application of the legal principles and practices involved in governmental regulation of the business of "carriers," whether it be by motor vehicles, railroads, boats or aeroplanes, seems unwarranted and uneconomic, and bound ultimately to be against the best interests of the public.

10. Dependent upon the particular use to which a commercial motor vehicle is put, its owner, lessee, assignee, etc., is either a "carrier" or a "non-carrier".

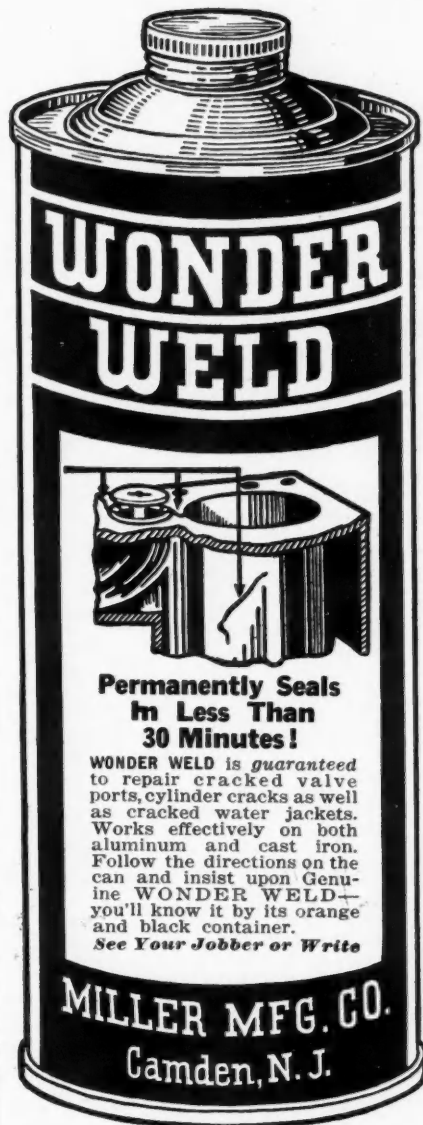
11. "Motor vehicle carriers" are those whose motor vehicles are used

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are available in sizes ranging in capacities from 1½ to 15 tons.

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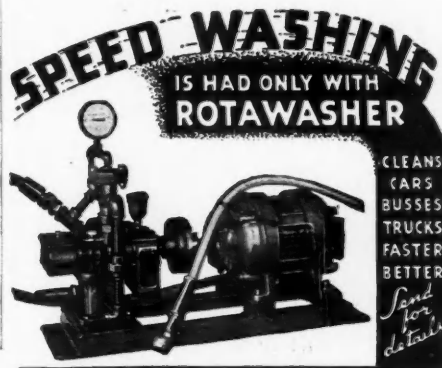
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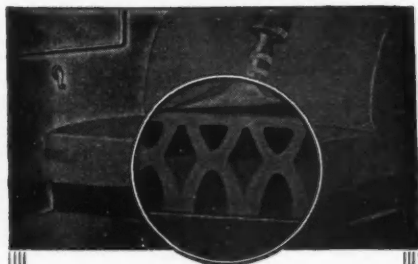
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primarily and principally in the business of transporting commodities (or persons) on the highways for a consideration. In other words, they are those who are primarily and principally engaged in selling transportation as a service in connection with which they utilize motor vehicles on the public highways.

12. All others utilizing motor vehicles on the highways are "motor vehicle non-carriers."

13. "Motor vehicle carriers"—whether of property or persons—are increasingly being subjected to the regulation of their business by laws and rules and regulations promulgated by Administrative Bodies under such laws. In the case of interstate commerce there is the Motor Carrier Act with the Motor Carrier Division of the Interstate Commerce Commission as the administrative body. In the matter of the intrastate commerce of the forty-eight (48) states there are a growing number of regulatory laws with existing Public Utilities Commission, Railroad Commissions, etc., as the regulatory bodies.

14. The enforcement of these laws and the rules and regulations derived therefrom has brought to light the fact that there are various distinct types of "motor vehicle carrier" operations and for the purpose of defining and treating these various types effectively the following classifications have so far been developed and found their ways into laws and rules and regulations promulgated under such laws:

- "Motor Vehicle Common Carriers."
- "Motor Vehicle Contract Carriers."
- "Motor Vehicle Private Carriers."

15. Unfortunately, however, the lines of demarcation between "motor vehicle carriers" on the one hand, and "non-motor vehicle carriers" on



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the other, have not been so clearly and definitely established as to free the latter—namely, "motor vehicle non-carriers"—from demands that their operations be subjected to the same kind of laws and rules and regulations based thereon which are being applied to the business operations of motor vehicle "common," "contract" and so-called "private carriers."

16. As a concrete illustration of this tendency there is a school of thought which contents that the use of motor vehicles by brewers, oil companies, packing houses, tire companies, grain elevators, etc., for the transportation of their commodities on the highways as an incident to the business operations in which they are principally and primarily engaged puts them in the category of those who are engaged in the "motor vehicle carrier" business.

17. If this contention be granted it is difficult to say where a line of demarcation between "motor vehicle carrier" operations and "motor vehicle non-carriers" operations can ever be drawn. Indeed, pushed to its logical conclusions the admission of the principle would mean that the local butcher, baker, laundry man, and all others utilizing motor vehicles on the highways in conjunction with the business activities in which they are principally and primarily engaged would ultimately put them in the category of "motor vehicle carriers" and subject them to whatever laws and rules and regulations based thereon that might be laid down for the class of "motor vehicle carrier" in which they may happen to be placed by law or rule or regulation.

18. In view of the implications and possible consequences of public policies and practices placing the incidental use of motor vehicles by industries and trades not principally

(TURN TO PAGE 91, PLEASE)

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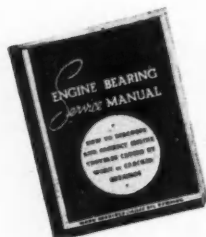


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COMMERCIAL CAR JOURNAL
OCTOBER, 1938

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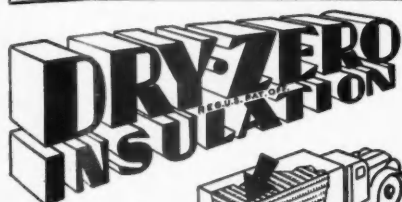
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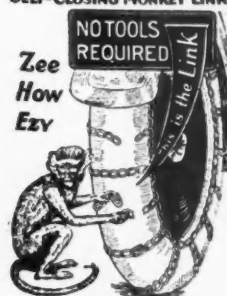


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(CONTINUED FROM PAGE 87)

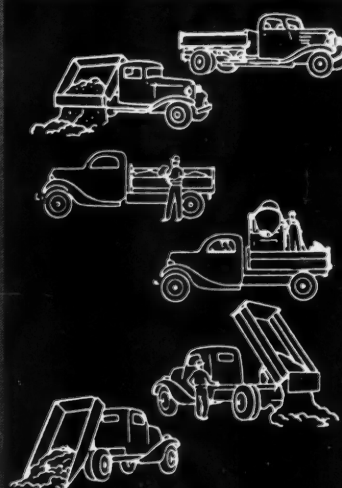
and primarily engaged in the business of transportation in the class of "motor vehicle carrier" operations, it would seem to be the part of wisdom for "motor vehicle non-carriers" to oppose this tendency wherever and whenever it manifests itself.

19. Every effort should be made to see to it that the laws and rules and regulations promulgated under existing laws which fail to set up a clean-cut line of demarcation between "motor vehicle carriers" and "motor vehicle non-carriers" should be repealed or amended forthwith. The fact that the legislatures of forty-four (44) states will meet in regular session the early part of 1939 makes such a move necessary at once.

20. To these ends steps should be taken immediately to analyze all existing federal and state laws and rules and regulations based thereon for the purpose of determining where and to what extent the definitions of "motor vehicle carriers," "motor vehicle contract carriers," "motor vehicle common carriers" and "motor vehicle private carriers" transgress upon those phases of highway transportation which would logically and rightly be classified as "motor vehicle non-carrier" activities.

21. So far as the physical attributes of motor vehicles and their loads using the highways are concerned—that is in the matter of length, width, height, weight, brakes, lights, etc., etc., there is no reason whatever why any differentiation should be made in the requirements for "motor vehicle carriers" on the one hand and "motor vehicle non-carriers" on the other. The same is true with regard to their operation on the highway in the matter of speed and other rules of the road. The general motor vehicle laws of

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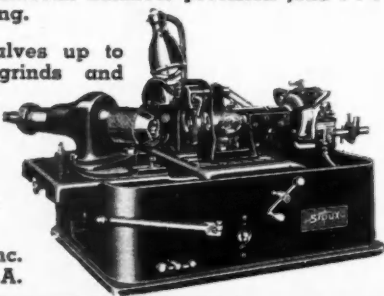
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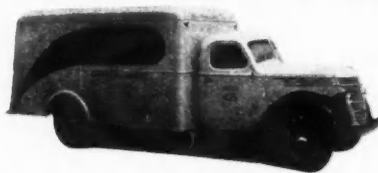
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able to any and all motor vehicles and their use on the highways whether they be "motor vehicle carriers" or "motor vehicle non-carriers." Separate and distinct administrative and enforcement agencies are not necessary. As for the states, the Motor Vehicle Commissioners or similar officers or agencies should have complete jurisdiction in such matters.

22. When we come, however, to laws and rules and regulations based on such laws having to do with the utilization of motor vehicles for business purposes or incident to business purposes, it is highly essential that we at all times keep the "motor vehicle carrier" and the "motor vehicle non-carrier" distinct and separate. The "motor vehicle carrier" has and always should contemplate the utilization of motor vehicles on the highways principally and primarily for the business of transportation for a consideration. All other uses should fall in the category of "motor vehicle non-carriers." Granted that laws should be passed regulating in the public interest such "motor vehicle carrier" business operations as distinguished from laws dealing

with the motor vehicle used for such highway transportation business, it is highly essential that they and rules and regulations based thereon be kept "within bounds."

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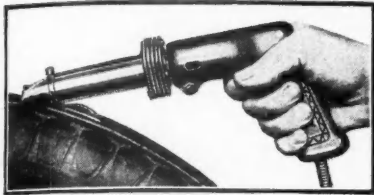
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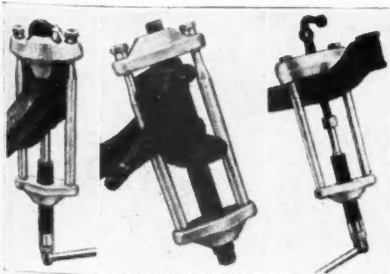


rim, or a casing only. It has a ratchet and pawl arrangement which permits the tire to be turned one way only in either direction. For full details write Weaver Mfg. Co., Springfield, Ill.

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New improvements in the design of the Snap-on king pin puller adapt it to practically all cars (except knee action). In addition, a special head has been constructed which enables the tool to be used for the removal of perch hangers on Ford cars and trucks. Most king pins require an excess of power to remove them, and this pulling tool has been designed to provide all the energy necessary to handle the toughest of them.

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ATA Convention Opens Oct. 31

Dates of the annual convention of the American Trucking Association, to be held at the Statler Hotel, Detroit, have been set for Oct. 31 to Nov. 2, inclusive, with Nov. 3 being set aside as Factory day. A number of automotive manufacturers in and around Detroit have organized special trips to en-

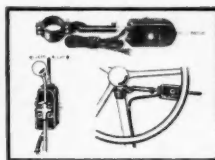
able visiting ATA delegates to see their operations first hand on this day.

James B. Godfrey, Jr., Charles J. Yokum and Walter F. Carey are in charge of convention arrangements and have announced that William P. Helm, prominent newspaper writer and author will be a featured speaker. W. J. Cameron, of the Ford Motor Co., will give the keynote address.

August Truck Production

A last minute news dispatch reports truck production in the United States and Canada during the month of August totaled 35,249 compared with 38,330 in July. For further production details refer to page 44 of this issue.

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